Parental Influence on Adolescent Sexual Behavior: A Current Look at the Role of Communication and Monitoring and Supervision

Leslie M. Kantor

Submitted in partial fulfillment of the
requirements for the degree
of Doctor of Philosophy
in the Graduate School of Arts and Sciences

COLUMBIA UNIVERSITY

2015

ABSTRACT

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Leslie M. Kantor

Parents are central to adolescents' lives and extensive research shows that parents can influence adolescent and young adults' sexual decision-making in positive ways. However, the ability of interventions to help parents influence their children's sexual health has been modest. In many cases, interventions for parents have not been guided by theory or strong research and many interventions for parents are based on only a general sense that more communication between parents and their children on topics related to sexuality is helpful. Currently, millions of dollars in public funding in the United States are designated for programs to reduce teen pregnancy and prevent sexually transmitted diseases. In addition, many foundations and individuals contribute significant funds to organizations that implement programs that strive to improve adolescent sexual health. Increasingly, there is an interest in including program components for parents in order to help them to positively influence their teens' sexual decision-making. At this time, few interventions for parents related to influencing their teens sexual decision-making and behavior have been developed that have resulted in positive outcomes, with the notable exceptions of *Families Talking Together* and *Get Real: Comprehensive Sex Education that Works*, which have both been added to the United States Department of Health and Human Services list of evidence-based programs in the last 18 months.

In order to develop additional interventions of benefit to parents and adolescents and to ensure that policy and practice are strengthened, up-to-date information from large, diverse

samples about the frequency and content of family communication about sexuality currently taking place between parents and teens is critical. Few studies have allowed for direct comparison of African American, Hispanic and White families in terms of communication about sexuality and parental monitoring of adolescents. Understanding both similarities and differences can help with tailoring interventions to have more positive effects on teen sexual decision-making and behavior.

One challenge to better understanding the influence of parental communication on adolescent sexual health is the wide variety of measures used in research, with some studies relying only on single item measures of communication. Without consistent measurement of communication and its many facets, it is difficult to ascertain which aspects of communication may be the drivers of behavior or to compare results across studies. Scales with strong psychometric properties are needed to strengthen the consistency and quality of research on parent-child communication about sexuality. Further, these scales must be tested with samples that include participants that are racially and ethnically diverse and samples that include fathers and mothers, as well as teen males and females to allow for scales to be validated by gender and race/ethnicity and for both parents and teens. The current study resulted in the development of three new scales with strong psychometric properties, which can now be used in research on parent-child communication about sexuality.

This study also allowed for an examination of current barriers to communication about sexuality including the ways that those barriers differ and influence communication for African American, Latino and White parents and teens. Further, understanding the role that monitoring can play in promoting teens' sexual health also merits up to date exploration as well as greater understanding of whether monitoring practices vary in diverse families or for teen males

compared to females is needed to increase awareness of opportunities for positive influence on young people's sexual development.

The current study is particularly valuable given that many data sets do not allow for direct comparisons of African American, Latino and White teens and parents. The extent to which family communication or monitoring practices differ may suggest ways that interventions should be tailored for various populations or may suggest positive practices that can be promoted across groups. In addition, a current understanding of how communication and monitoring may vary with sons compared to daughters can provide awareness and insight to both parents and program developers about the types of parenting behaviors that might be addressed by programs and improved in order to make a difference in the lives of young people.

The papers in this dissertation utilize data collected from 1,663 parent-child dyads in July, 2014 by Gfk, Inc. Gfk, Inc. has constructed a large, diverse panel of adults in the United States. They recruit their panel using a combination of random digit dial phone techniques and address-based sampling. More information on the construction of the overall Gfk, Inc. panel is available at: http://www.gfk.com/us/Pages/default.aspx. For this study, parents were sampled from the broader Gfk, Inc. panel using e-mail invitations and were asked to consent on behalf of themselves and one of their children between the ages of 9 and 21. For non-Latino White parents, a random selection of parents were invited. All Latino and African American parents in the panel were invited to participate. An algorithm was used to request which of the parent's children to invite when a parent had more than one child in the eligible age group which was age 9-21. The organization requesting the data had a particular interest in 15-19 year olds and the algorithm was constructed accordingly. Within a household, when there was more than 1 child in the 9-21 year old age range, 15-19 year olds were selected at a 3:1 ratio (e.g. when there

was a 15-19 year old and a 9-14 year old or a 20-21 year old in the same household, for every three times a 15-19 year old was selected, a non-15-19 year old was selected one time). The final sample included 749 teens ages 14 and younger, 740 teens ages 15-19, and 174 teens ages 20-21.

In addition to parental consent, teens assented for their participation in the study. The parent questionnaire contained 91 items and the teen questionnaire contained 46 items. The median completion time was 17 minutes. Seven hundred eleven Whites, 300 African Americans and 652 Latino dyads completed the surveys. One thousand eighty one mothers and 582 fathers completed the surveys and 801 girls and 862 boys completed the surveys. Surveys for parents were customized using the name of the child that parents stated would take the survey and teen surveys were customized to include the term father or mother based on which parent had completed the survey. I completed a preliminary analysis of the demographics of the study sample compared to available nationally representative data prior to beginning the research for the dissertation. That analysis immediately follows this introduction. The three papers follow.

Paper 1 is a confirmatory factor analysis on five potential scales for measuring parent-child communication about sexuality and barriers to communication. Paper 2 explores parent-child communication about sexuality related topics including differences in communication by race/ethnicity, gender and age and whether communication is associated with changes in the likelihood of adolescents' ever having engaged in any sexual behavior, ever having engaged in oral sex, ever having engaged in vaginal sex, consistency of condom use in the past 3 months and/or consistency of birth control use (other than condoms) in the past 3 months. Paper 3 examines parent and teen reports of parental monitoring and the association between monitoring and sexual behavior outcomes as well as differences in monitoring among African American,

Latino and White families and of sons compared to daughters. Conclusions and implications follow the third paper.

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Introduction

Prior to commencing the dissertation analyses, I assessed the comparability of the study sample to the general population of the United States, using the 2013 American Community Survey (ACS) data to examine educational attainment, household income, employment and marital status. Rates of sexual activity and condom/birth control use for teen respondents were compared to data from the Youth Risk Behavior Survey (YRBS) and the National Survey of Family Growth (NSFG). I focused on the demographic attributes that I planned to use as covariates in the analyses for my dissertation. The ACS data was generated using the American Fact Finder tool available at http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml. For the YRBS and NSFG data, I was able to review recently published articles analyzing those data sets. I examined both the unweighted and the weighted data for the sample in order to assess how well the weights provided by Gfk corrected for any differences between the sample and general population metrics.

In Table 1, levels of employment are assessed for the parent sample compared to nationally representative samples. The census data is for the population age 16 and over. The sample White and Black parents are more likely to be employed than the U.S. population of adults. However, the Hispanic employment data is similar between the study sample and the U.S. population of Hispanics age 16 and over. Weighting the data changes the data only slightly and the comparability to the national data remains the same. The age of parents in the study compared to the general population 16 and over may be one explanation for the higher level of employment in the sample. In addition, employment levels may be higher among parents than among non-parents. Thus, the employment data does not necessarily demonstrate a difference between the study sample and the general population.

In Table 2, the study sample is compared to US adults in terms of highest level of education completed. Examining the unweighted data, the study sample is less likely to have attained "less than a high school diploma" than adults in the US population ages 25 and older. Blacks are more educated in the study sample than in the population in general. For example, 14% of study sample parents that are Black report high school as their highest education level compared to 31% of Black adults ages 25 and older in the U.S., and higher percentages of Black parents in the study sample have either completed some college or an associates degree, a college degree or a graduate degree compared to Black adults in the U.S. overall. When the weights are applied for Black parents in the sample, the results adjust to be more comparable to the US population of Blacks in general, with a larger percentage achieving high school as their highest degree and fewer attaining a bachelor's degree or higher. For Whites, the unweighted study sample is comparable in terms of the percentage holding a high school diploma or equivalent, those that have completed some college or an associate degree, those that have completed college and those that have a graduate or professional degree and the weights do not change the results. For Hispanics, the unweighted study sample is less likely to report attaining less than a high school degree, is slightly less likely to report high school as their highest degree attained, and is more likely to report some college or an associates degree, a bachelor's degree or a graduate or professional degree than the US population age 25 and up. When weights are applied for Hispanics, a larger percentage of the study sample has less than high school than in the general population, a comparable percentage has achieved a high school or equivalent degree, a comparable percentage have completed some college, and a comparable percentage have completed a bachelors or graduate degree indicating that the weights do correct for bias in the sample for each category except the less than high school for Hispanic parents.

Examining results from a one-way ANOVA on the sample data related to education, which included 14 categories ranging from "no formal education," to "professional or doctorate degree," the mean for White parents in the sample was 10.41, the mean for Black parents was 10.64 and the mean for Hispanic parents was 9.34. There were no significant differences between White and Black parents. There are significant differences in educational attainment between Hispanic parents and White parents and between Black and Hispanic parents in this sample, with African American and White parents having higher educational attainment than Hispanics. This pattern aligns with educational attainment in the general population.

Table 3 includes the median income of the study sample compared to the median income for households in the United States. Using unweighted data, the median income for White households in the study sample is slightly higher than in the U.S., for Black households the median income is similar to the U.S. and for Hispanic households income is lower in the study sample. Once the weights are applied, the income for all households for all races/ethnicities in the study sample is higher, which makes it even less comparable than the U.S. general population for White and African American households. The weights for Hispanics make the weight more comparable for the U.S. population. Thus, I will use caution in applying the weights for any analyses that examine income as a covariate.

In the study itself, there were 19 response categories related to income ranging from "less than $5,000" to "$175,000 or more." The mean for White parents was 13 (corresponding to an income level of $60,000-$74,999), the mean for Black parents was 10.11 (corresponding to $35,000-$39,999), and the mean for Hispanic parents was 9.55, (corresponding to $30,000-$34,999). There was no significant difference in household income between Black and Hispanic parents in the study. However, there were significant differences between White and

Black parents and between White and Hispanic parents. This does align with data from the ACS which shows that White households, on average, have higher incomes than Black or Hispanic households.

Table 4 includes marital status for the study sample compared to the U.S. population ages 15 and older. Using the unweighted data, the study sample is more likely to be married across all racial/ethnic groups. The study sample has a similar population to the U.S. of divorced parents among Blacks and Hispanics but Whites in the study sample are less likely to be divorced than within the general population. A smaller percentage of people across all racial/ethnic groups in the study sample have never been married. Once the weights are applied, little shifts for Whites but the weights for divorce for Blacks and Hispanics actually make those groups less similar to the U.S. population rather than correcting the difference. The higher proportion of married adults in all ethnic/racial groups in the study sample compared to the general population likely reflects the fact that parents are more likely than non-parents to be married. Given that little changes when applying the weights except that the divorce percentages become more dissimilar, it likely makes more sense to use unweighted data for the covariates related to marital status.

Within the study sample, White parents were most likely to be married, with 82% of the sample reporting they were currently married compared to 68.4% of Hispanic parents and 45.67% of Black parents. A higher proportion of African American parents reported never being married compared to Hispanic and White parents. Among African American parents, 24.66% reported having never been married compared to 6.28% of Hispanic parents and 2.2% of White parents. African American parents reported higher rates of divorce than Hispanic or White parents as well with 15% of African American parents reporting they were currently

divorced compared to 7.8% of Hispanic parents and 8.58% of White parents. White adults are more likely than African American or Hispanic adults to be married in the general population but the percentage of White adults in this sample is more likely to be married and less likely to be divorced than in the general population of U.S. adults. (See Table 4.)

Sexual Behavior

First, I examined sexual behavior for the teen sample overall. Only 21 respondents ages 14 and under reported that they had ever engaged in "any sexual behavior" which was defined as "touching without clothes on or oral, vaginal or anal sex with another person." Given both the extremely small number of 14 and under participants that had engaged in any sexual behavior and the fact that most nationally representative data on sexual behavior is calculated for ages 15 and up, I generated rates of sexual activity and condom and birth control use only for the teen sample respondents ages 15 and older for purposes of these preliminary analyses. Unweighted findings are as follows:

- For "any sexual behavior," 356 of the 914 subjects ages 15-21 reported yes (38.94%) and 538 of 914 reported no (58.86%).
- Those that reported "yes" to any sexual behavior, then received follow up questions about specific activities:
- For oral sex, 216 of 356 reported yes (60.67 %) and 132 of 356 reported no (37.08%). Eight skipped this question. For the overall sample of respondents ages 15-21, this indicates that 216 of 914 respondents had ever engaged in oral sex or 23.63% of the overall sample of young people age 15-21.

- For vaginal intercourse, 269 of 356 reported yes (75.56%) and 80 of 356 reported no (22.47%). Seven skipped this question. Of the overall sample of respondents age 15 and up, 269 of 914 reported yes or 29.4%.
- Those that reported they had ever had vaginal intercourse were asked if they had had vaginal intercourse in the past 3 months. 176 of 269 reported yes (65.43%) and 90 of 269 reported no (33.46%). 3 skipped this question.
- Those that reported yes to sex in the past 3 months were then asked how often they or their partner had used condoms:
    - 103 of 176 (58.5%) reported "every time"
    - 23 of 176 (13.07%) reported "more than half the time"
    - 12 of 176 (6.8%) reported "about half the time"
    - 12 of 176 (6.8%) reported "less than half the time"
    - 26 of 176 (14.77%) reported "never"
- Those that reported yes to sex in the past 3 months were also asked how often "you or your partner used a birth control method other than condoms when you've had vaginal sex e.g. the pill, ring, IUD, etc.":
    - 96 of 176 (54.54%) reported "every time"
    - 8 of 176 (4.5%) reported "more than half the time"
    - 9 of 176 (5.1%) reported "about half the time"
    - 10 of 176 (5.7%) reported "less than half the time"
    - 49 of 176 (27.84%) reported "never"

Table 5 compares the weighted and unweighted study sample data on sexual activity to available national data.

Table 6 provides sexual activity data by age for 15-21 year olds in the sample and compares 15-17 year olds and 18-19 year olds to data available from the National Survey of Family Growth. This table shows that using the outcome variable: "Have you ever engaged in any sexual behavior (touching without clothes on or oral, vaginal or anal sex) with another person," the 15-17 year old group in this study is quite comparable in reported sexual activity to teens of the same age in the NSFG that report vaginal sex. However, sexual activity among the 18-19 year olds in this sample is much less frequent than what is reported in the NSFG.

Table 7 provides sexual activity data for any sexual behavior, vaginal intercourse and oral sex by race and ethnicity. Overall sexual activity levels are lower in this sample than in the NSFG for all race/ethnicities. The pattern of behavior for oral sex does mirror what is found in the NSFG, with Whites reporting higher rates of oral sex than Blacks and Black reporting more oral sex than Hispanics.

Discussion and Implications for Upcoming Papers

There are challenges to doing a direct comparison of the study data compared to other national data for several reasons. First, the questions asked related to sexual behavior are somewhat different on the study survey, the Youth Risk Behavior Survey and the National Survey of Family Growth (Copen, Chandra, & Martinez, 2012, Kann et al., 2014, Martinez, Copen & Abma, 2011.) In addition, the age of respondents varies between the study parents and teens and available data sets on population demographics and sexual behavior. In addition, the reporting categories for the Census vary from the study sample in important ways. The Census

is of the United States population as a whole and is not confined to parents. Some of the ways that the study sample differs may be attributable to ways in which parents differ from the general population. I was not able to find a good national data source for parents or much literature that included analyses of demographic differences between parents and the general population.

However, there are several areas in which the study sample and the general population are similar enough to give me confidence that the results of this dissertation project are generalizable. In some cases, the weights are actually more likely to create differences between sample and the general population leading me to conclude that in some cases such as for variables related to marital status and income it is better to utilize the unweighted data for the demographic variables.

There are several potential implications of a sample that is higher income and more likely to be married and in which the teens are less likely to be sexually active than the general population. First, I will need to carefully assess whether levels of communication or monitoring and supervision are actually the likely drivers of sexual behavior rather than important family variables such as education, income and marital status, which are strongly associated with sexual outcomes in the literature. For this reason, I will include these variables as covariates in my models. Further, I need to be cautious about my conclusions given such a small sample of sexually active youth. This makes the more robust descriptive piece of each paper even more important as the dynamics of communication and monitoring and evaluation can be assessed for the entire sample while the sexual outcomes will only be for a small subset. However, there are reasons to have confidence in the generalizability of findings given these preliminary analyses.

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Tables

Table 1: Employment Status of the study sample compared to the US population of adults ages 16 years old and over

	Study Sample *Unweighted*	**Study Sample *Weighted***	**U.S. Population age 16 and over**
	Employed		*Employed*
White Non-Hispanic	70.7%	71.4%	58.5%
Black Non-Hispanic	67.7%	67.2%	52.3%
Hispanic	61.7%	59.3%	59.5%

Table 2: Highest level of education completed of the study sample compared to the US population of adults ages 25 years and over

	Study *unweighted*	**Study *weighted***	**U.S age 25 and older**	**Study *unweighted***	**Study *weighted***	**U.S. age 25 and older**
	Less than high school			*High school diploma or equivalent*		
White Non-Hispanic	6.9%	5.9%	11.4%	29.9%	27.3%	28.2%
Black Non-Hispanic	11.0%	12.9%	16.3%	14.0%	26.9%	31.1%
Hispanic	22.2%	41.1%	36.0%	20.9%	26.3%	26.9%

	Study *unweighted*	**Study *weighted***	**U.S age 25 and older**	**Study *unweighted***	**Study *weighted***	**U.S. age 25 and older**
	Some college or associate degree			*Bachelor degree*		
White Non-Hispanic	29.9%	29.9%	29.4%	19.7%	21.1%	19.3%
Black Non-Hispanic	46.7%	36.2%	33.3%	22.7%	15.6%	12.3%
Hispanic	32.1%	20.5%	23.3%	16.6%	7.5%	9.4%

	Study *unweighted*	**Study *weighted***	**U.S age 25 and older**
	Graduate or Professional Degree		
White Non-Hispanic	13.5%	15.8%	11.6%
Black Non-Hispanic	11.7%	8.3%	7.0%
Hispanic	8.3%	4.6%	4.3%

Table 3: Household Income of the study sample compared to households in the US

	Study sample ***Unweighted***	**Study sample** ***Weighted***	**U.S.**
	Median income		
White Non-Hispanic	$60,000 to $74,999	$75,000 to $84,999	$55,867
Black Non-Hispanic	$35,000 to $39,999	$40,000 to $49,999	$34,815
Hispanic	$30,000 to $34,999	$35,000 to $39,999	$41,107

Table 4: Marital Status of the study sample compared to the US population of adults ages 15 years old and over

	Study *unweighted*	**Study *weighted***	**U.S**	**Study *unweighted***	**Study *weighted***	**U.S.**
	Now married, except separated			*Widowed*		
White Non-Hispanic	82.0%	83.8%	49.6%	1.1%	1.1%	9.7%
Black Non-Hispanic	45.7%	50.6%	25.8%	1.7%	2.0%	8.5%
Hispanic	68.4%	73.7%	43.2%	1.2%	0.0%	3.3%

	Study *unweighted*	**Study *weighted***	**U.S**	**Study *unweighted***	**Study *weighted***	**U.S.**
	Divorced			*Separated*		
White Non-Hispanic	8.6%	7.7%	12.7%	1.3%	1.1%	2.1%
Black Non-Hispanic	15.0%	9.3%	13.3%	5.0%	4.7%	4.7%
Hispanic	7.8%	4.0%	8.4%	3.7%	3.2%	3.5%

	Study *unweighted*	**Study *weighted***	**U.S.**
	Never married		
White Non-Hispanic	7.0%	6.1%	25.9%
Black Non-Hispanic	32.6%	33.3%	47.7%
Hispanic	18.9%	18.1%	41.6%

Table 5: Sexual activity and use of condoms and birth control in study sample compared to YRBS and NSFG

	Study (ages 15-21) ***unweighted***	**Study (ages 15-21)** ***weighted***	**YRBS (high school, grades 9-12)**	**NSFG (ages 15-19)**
Vaginal Intercourse (ever)	29.4%	30.8%	46.8%	43%
Oral Sex (ever)	23.63%	24.5%	Not collected	45% males 48% females
Consistency of condom use	58.5% (every time, past 3 months)	54.6%	53% female (at last sex), 64.3% male (at last sex)	50% female, 67% male (100% of time, past 4 weeks)
Consistency of birth control use (other than condoms)	54.54% (every time, past 3 months)	53.4%	25.3% (at last sex) (all methods other than condoms)	62% (at last sex) (31% pill, 20% condom and pill, 11% other, excluded condom only)

Table 6: Sexual activity among 15-21 year olds—using measure: "Have you ever engaged in any sexual behavior (touching without clothes on or oral, vaginal or anal sex) with another person?"

Age	**Number (percent) never sexually active**	**Number (percent) ever sexually active**	**NSFG 15-17 year olds ever (2006-2010)**	**NSFG 18-19 year olds past 3 mos (2006-2010)**
15	139 of 166 (83.73%)	27 of 166 (16.26%)		
16	122 of 163 (74.85%)	41 of 163 (25.15%)		
17	85 of 143 (59.44%)	58 of 143 (40.56%)		
15-17 year olds	346 of 472 **(73.3%)**	126 of 472 **(26.7%)**	**27%**	
18	76 of 154 (49.35%)	78 of 154 (50.65%)		
19	47 of 99 (47.47%)	52 of 99 (52.52%)		
18-19 year olds	123 of 253 **(48.6%)**	130 of 253 **(51.38%)**		**62.7%**
20	34 of 82 (41.46%)	48 of 82 (58.54%)		
21	35 of 87 (40.23%)	52 of 87 (59.77%)		

Table 7: Sexual Behavior in Study Sample (All Ages) by Race and Ethnicity

Race/Ethnicity	Type of Sexual Behavior	Percent Never	Percent Ever	NSFG (ages 15-19)
White	Any sexual behavior	74.28%	25.71%	Not measured
Black	Any sexual behavior	75.51%	24.49%	Not measured
Hispanic	Any sexual behavior	80.46%	19.53%	Not measured
White	Vaginal intercourse	80.67%	19.32%	41.9%
Black	Vaginal intercourse	81.54%	18.46%	46.4%
Hispanic	Vaginal intercourse	86.9%	13.09%	42.1%
White	Oral sex	83.03%	16.97%	51.1%
Black	Oral sex	86.57%	13.42%	43.4%
Hispanic	Oral sex	89.84%	10.15%	41.8%

New Scales for Measuring Parent-Child Communication about Sexuality: Confirmatory Factor Analyses

Leslie M. Kantor

Columbia University

Abstract

This article reports on the development and psychometric properties of new scales for measuring parent-child communication about sexuality related topics, theory-based aspects of sexuality, and barriers to communication about sexuality. Data were obtained from a national survey of 1,663 parent-child dyads in the United States. Single factor confirmatory factor analyses (CFA) on five scales, three for parents and two for adolescents, were conducted to evaluate how effectively the items reflect the underlying latent communication constructs. Though initial model fit was good overall, inspection of the modification indices led to modifying the models to accommodate modest correlated errors that made substantive sense, and then re-fitting the models, which led to stronger model fit. The explained variances were large for most items in the topic communication and theory-based scales, suggesting that these items were appropriately collapsed into scales and that the items collectively reflect the relevant latent construct. However, the barriers scales for parents and teens showed that all of the items had significant unique variance, making aggregation into a single scale inappropriate. The final communication scales demonstrated measurement invariance across mothers and fathers, girls and boys and by race/ethnicity. Thus, this paper introduces three new scales with strong psychometric properties for measuring parent-teen communication about sexuality topics and theory-based communication about sexuality. Barriers items are more appropriately included in research and analyses as individual items rather than aggregating the items into scales.

Keywords: Parent-child communication, sexuality, scales, confirmatory factor analysis

Extensive research shows that parents can influence adolescents' and young adults' decision-making about sexuality (Guilamo-Ramos, Bouris, Lee, McCarthy, Michael, Pitt-Barnes & Dittus, 2012, Markham, Lormand, Gloppen, Peskin, Flores, Low & House, 2010, Guilamo-Ramos, Jaccard & Dittus, 2010, Jaccard, Dodge & Dittus, 2002, Dittus, Jaccard, & Gordon, 1999). Parent-child communication about sexuality, in particular, is of increasing interest in the field of sexual and reproductive health from both a research and an applied perspective. A 2010 systematic review of 190 studies by Markham et al. on parent-child connectedness and its association with sexual and reproductive health outcomes identified 58 studies on communication about sexuality (Markham, et al., 2010). The main behavioral outcome significantly associated with parent-child communication about sexuality in longitudinal research studies overall was delayed sexual initiation for girls (Markham et al., 2010). However, a recent study on an intervention for middle school youth with a focus on facilitating parent-child communication about sex showed a larger effect on delay of sexual initiation for boys compared to girls over a three year follow up period (Grossman, Tracy, Charmaraman, Cedar & Erkut, 2014). A structured literature review on paternal influences on adolescent sexuality showed that father-adolescent communication was associated in some studies with onset of sexual behavior but did not find evidence of associations between paternal communication and use of condoms or birth control, mainly because of a lack of studies examining paternal communication and condom or birth control use (Guilamo Ramos et al., 2012). Research on the link between parental communication and birth control use has shown some evidence consistent with both direct effects of communication on birth control use and moderating effects of communication on behavior. Hutchinson et al. found that increased mother-daughter communication about sexual risk led to a 19% reduction in the number of

episodes of unprotected sex (i.e., no condom use) in the past 3 months (Hutchinson, Jemmot, Jemmot, Braverman & Fong, 2003). Peer norms have been found to be more strongly associated with sexual behavior among teens who have not discussed sex or condoms with their parents, suggesting that lack of communication with parents may cause adolescents to turn to peers which, in turn, influences their behavior (Whitaker & Miller, 2000). Research related to communication about sexuality for various racial and ethnic groups has mainly shown that higher levels of parental communication about sexuality are protective, particularly for African Americans (Markham et al., 2010).

A challenge to better understanding the influence of parental communication on adolescent sexual health is the wide variety of measures used in research, with some studies relying only on single item measures of communication (Markham et al., 2010). Without consistent measurement of communication and its many facets, it is difficult to ascertain what aspects of communication may be the drivers of behavior or to compare results across studies. Scales that have been validated include the Sexual Communication Scale (SCS), the Parent-Adolescent Communication Scale (PACS), and the Parent-Teen Sexual Risk Communication Scale (PTSRC). The SCS is a 20-item scale which was validated on a small sample of 158 mainly white youth ages 14-18 (Somers & Canivez, 2003). The PACS is a 5-item scale that was validated on sample of 522 African American females (Sales, Milhausen, Wingood, DiClemente, Salazar & Crosby, 2006). The PTSRC is an 8-item scale, which has been validated in multiple studies, such as with 95 college freshmen and 234 19-21 year old licensed drivers (Hutchinson, 2007). These scales are helpful in measuring parent-adolescent communication about sexuality but still have weaknesses. The scales were developed on small samples, the issue of measurement invariance was not addressed, and the factor loadings were

not always supportive of the aggregation of items. Scales with strong psychometric properties are needed to strengthen the consistency and quality of research on parent-child communication about sexuality. Further, these scales must be tested with samples that include participants that are racially and ethnically diverse and samples that include fathers and mothers, as well as teen males and females to allow for scales to be validated by gender and race/ethnicity and for both parents and teens.

The majority of parents and teens report that they have communicated with one another about sexuality: "Averaging across a wide range of studies, about 70 percent of parents indicate that they have talked with their adolescents about sex, whereas about 50 percent of adolescents report engaging in such conversations with their parents" (Jaccard, Dodge & Dittus, 2002, pp. 22). However, many parents report difficulty communicating about sexuality with their children. In a study conducted on a statewide sample in California, more than two-thirds of parents reported some kind of difficulty, such as worry that their children were too young to hear about topics and concern that either the parents themselves or the children would be embarrassed by talking about topics related to sexuality (Jerman & Constantine, 2010). In a qualitative study of barriers to parents' ability to talk about sexuality, many parents worried that their 10-12 year old children were too young to hear about a number of topics related to sexuality as well as their ability to handle questions that might come up (Wilson, Dalberth, Koo & Gard, 2010). Additional hesitations about discussing sexuality with younger teens include parents' concerns about their own self-efficacy to handle the conversations (Wilson, Dalberth, Koo & Gard, 2010). Parents that report higher levels of comfort and knowledge about sexuality also report discussing a larger number of sexuality topics with their children (Jerman & Constantine, 2010).

However, outcomes of parental communication about sex have not been uniformly positive. For example, in an analysis by Khurana and Cooksey utilizing data from Waves 1 and 3 of the National Longitudinal Study of Adolescent to Adult Health (commonly referred to as AddHealth), frequency of maternal communication about sexuality was associated with a reduction in the number of sexual partners among daughters but this was moderated by perceptions of maternal disapproval of contraceptive use. When there was not a perception of disapproval of contraceptive use, frequency of maternal communication was associated with higher likelihood of multiple partners (Khurana & Cooksey, 2012) suggesting that both the content of messages about sexuality and conversation frequency matter in influencing teen and young adults' sexual decision-making.

Scales for measuring key dimensions of communication about sexuality are necessary for better exploring both the content and the frequency of parent-child communication as well as barriers to communication about sexuality.

In the present study, confirmatory factor analysis (CFA) using data collected from 1,663 parent-teen dyads (N = 3,326) throughout the United States allowed for the examination of potential communication and barriers scales whose items were selected based on theoretical and applied considerations. Data were used to ascertain the correlational structure between items, the extent to which the items reflected a common underlying factor (i.e., unidimensionality), how much common and unique variance existed for each item, and whether the results generalize across a range of exogenous factors. The sample included sufficient numbers of African American, Latino and non-Latino White parents and teens as well as fathers and mothers and male and female adolescents to allow for scales to be evaluated for measurement invariance by race/ethnicity and gender.

Methods

Respondents

Surveys of parents and their children ages 9-21 were conducted in July, 2014 by Gfk, Inc. Gfk has constructed a large and diverse panel of adults in the United States, which is recruited using a combination of random digit dial phone techniques and address-based sampling. Weights are provided to adjust the panel respondents to be representative of U.S. adults (using Community Population Survey benchmarks) with respect to key demographics (age, education, household income, Internet access, Census region, metro status, race/ethnicity, and gender). More information on the construction of the overall Gfk panel is available at: http://www.gfk.com/us/Pages/default.aspx

Parents for this study were sampled from the broader Gfk panel using e-mail invitations and parents were asked to consent on behalf of themselves and one of their children between the ages of 9 and 21, who was then asked to assent for their own participation in the study. For White parents, a random selection of parents from the panel were invited. All Latino and African American parents in the Gfk panel were invited to participate in this study. An algorithm was used to request which of the parent's children to invite when a parent had more than one child in the eligible age group. The organization requesting the data had a particular interest in 15-19 year olds and the algorithm was constructed accordingly. Within a household, when there was more than one child in the 9-21 year old age range, 15-19 year olds were selected at a 3:1 ratio (e.g., when there was a 15-19 year old and a 9-14 year old or a 20-21 year old in the same household, for every three times a 15-19 year old was selected, a non-15-19

year old was selected one time). The final sample included 749 teens ages 14 and younger, 740 teens ages 15-19, and 174 teens ages 20-21.

Seven hundred eleven Whites, 300 African Americans and 652 Latino dyads completed the surveys. One thousand eighty-one mothers and 582 fathers completed the survey and 801 girls and 862 boys ages 9-21 completed the survey.

Measures

The parent questionnaire contained 91 items and the teen questionnaire contained 46 items. The median completion time was 17 minutes. Three sets of variables related to parent-child communication about sexuality were included: one inquiring about the frequency of discussing various topics related to sexuality, a second related to potential barriers to communication about sexuality, and a third created based on a strong theory of adolescent decision making, the Unified Theory of Behavior (Guilamo-Ramos, Jaccard, Dittus, Gonzalez & Bouris, 2008, Jaccard, Dodge & Dittus, 2002). The communication variables related to sexuality topics were generated based on (a) the *Guidelines for Comprehensive Sexuality Education, K-12,* which is the primary framework for comprehensive sexuality education in the United States (National Guidelines Task Force, 2004), (b) a literature review of studies on parent and teen communication about sexuality and (c) consideration of current public policy concerns related to sexuality such as sexual assault and staying safe on social networking sites about which little is known in terms of parent child communication. There were 13 communication topic variables that were included on the parent and child surveys:

1. Reproduction and how babies are made
2. Puberty and changes that occur physically, socially and emotionally during the teen years

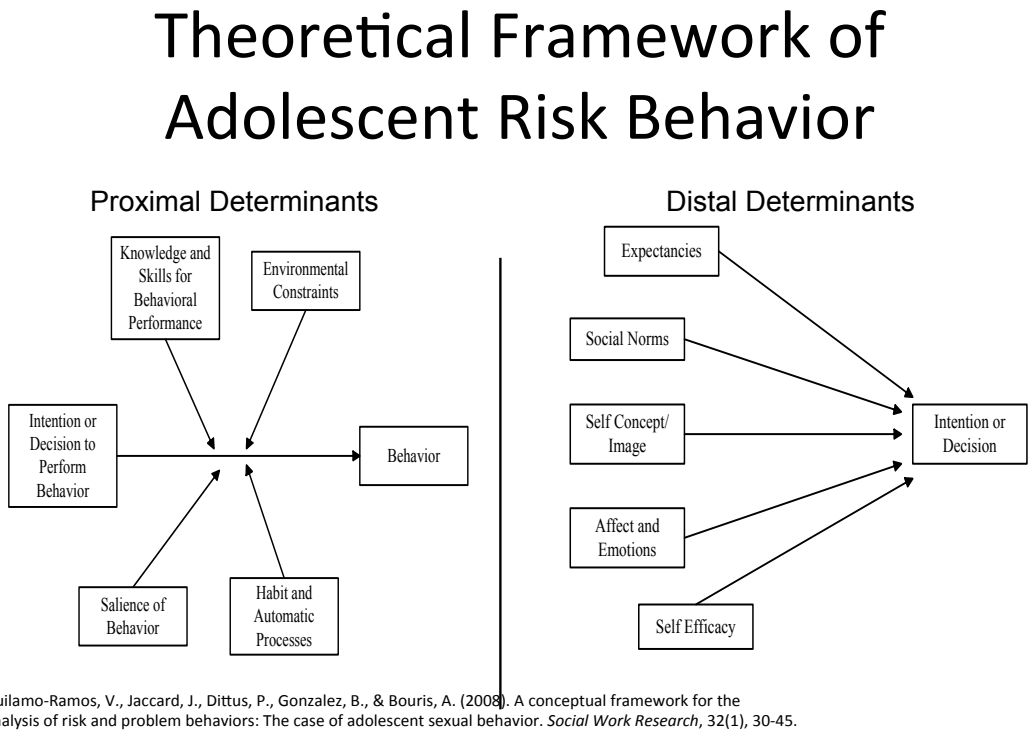
3. Healthy and unhealthy romantic relationships
4. How to deal with peer pressure
5. Similarities and differences between boys and girls/men and women
6. Specific strategies for saying no to sexual activity
7. The importance of never pressuring anyone into doing something sexually that they don't want to do
8. Birth control methods
9. How to prevent sexually transmitted diseases, including HIV
10. Where to get reliable information about sexual health
11. Where to get reproductive healthcare services
12. Sexual orientation (e.g. information about being straight, gay, lesbian, or bisexual)
13. How to stay safe during online activities such as social networking (such as Facebook)

For this set of topics, both parents and adolescents were asked to indicate how many times they had talked about each topic and were given answer choices that ranged from "0" to "10 or more."

A second set of variables related to communication was developed based on a synthesized framework for which significant empirical evidence exists, the Unified Theory of Behavior (Jaccard, Dodge & Dittus, 2002, Guilamo-Ramos, Jaccard, Dittus, Gonzalez & Bouris, 2008). The framework was developed based on a meeting convened by the National Institute of Mental Health (NIMH) in response to the fact that hundreds of studies related to health behavior were based on a small set of theories. The Unified Theory of Behavior is a well-established framework for explaining both adolescent sexual behavior and parent-child

communication about sexuality (Jaccard, Dodge & Dittus, 2002, Guilamo-Ramos, Jaccard, Dittus, Gonzalez & Bouris, 2008). There are two sequences to the framework. First, there are a set of core predictors related to whether an individual forms an intention to perform a specific health behavior. These are: 1) social norms, 2) beliefs and expectancies, 3) self-concept, 4) affect and emotions and 5) self-efficacy. In terms of norms, two types of norms are important. What individuals perceive as the behaviors of their peers are relevant (descriptive norms) as well as the norms of the people closest to them such as partners or parents (injunctive norms). Once a behavioral intention is formed, there are then a second set of variables that influence how likely it is that the intention will translate into actual behavior. These proximal determinants of behavior include 1) the knowledge or skills needed to carry out the behavior, 2) environmental constraints, 3) the salience of the behavior and 4) habit and automatic processes (Jaccard, Dodge, & Dittus, 2002, Guilamo-Ramos, Jaccard, Dittus, & Bouris, 2008). A graphical depiction illustrating the theory is included as Figure 4. In Paper 1, communication variables from the survey related to the theory will be examined to assess whether they are highly intercorrelated and emanate from a single common underlying factor or whether they are relatively independent, with each capturing unique variance that may have predictive utility in its own right. The results of this paper will inform both the other papers in this project and future research on whether parents are communicating about topics that are established drivers of health behaviors.

Figure 1



Guilamo-Ramos, V., Jaccard, J., Dittus, P., Gonzalez, B., & Bouris, A. (2008). A conceptual framework for the analysis of risk and problem behaviors: The case of adolescent sexual behavior. *Social Work Research*, 32(1), 30-45.

Theory-based communication topics were asked only of the parents. The question stem and items were: How many times have you spoken with [child's name] about:

1. What to expect from sexual relationships.
2. The advantages and disadvantages of waiting until [she/he] is older to engage in sex.
3. How common sexual behavior is among people [his/her] own age.
4. Whether or not [name] thinks of [herself/himself] as someone who is ready for a sexual relationship.
5. The kinds of emotions that can accompany having sex.
6. The advantages and disadvantages of having sex

7. The kinds of emotions that can accompany waiting until you are older to have sex.
8. How confident [name] is about following through on the decisions [she/he] has made about sex.
9. Reasons to avoid getting pregnant or impregnating someone else while a teenager.
10. Reasons to avoid getting a sexually transmitted disease.
11. What to do if [she/he] is ever pressured to do something sexually that s/he doesn't want to do.

Parents indicated the number of times they had discussed each item with their children, with values ranging from "0" to "10 or more".

Barriers to communication variables were developed based on the empirical literature. Responses were made on a 10-point scale with anchors at the end points. A "1" was labeled "strongly disagree" and "10" was labeled "strongly agree." The wording from the parent survey is listed first, followed by the wording on the teen survey in parentheses.

1. [Name] is too young for me to talk about these topics with. (I am too young for my [father/mother] to talk about these topics with me).
2. I would be embarrassed talking to [name] about these topics. (I would be embarrassed if my [father/mother] talked with me about these topics.
3. I think it is better if [name]'s other parent talks to him/her about these topics. (My [father/mother] leaves it to my other parent to talk with me about these topics.)
4. I don't have enough information to talk with [name] about these topics. (My [father/mother] doesn't have enough information to talk with me about these topics.)
5. I don't think my friends talk to their children about these topics. (My [father/mother] thinks other parents don't talk to their children my age about these topics.)

6. I think the schools do a good job of telling [name] what s/he needs to know about these topics. (My [father/mother] thinks the schools do a good job of telling me about these topics.)
7. I've already talked enough with [name] about these topics. (Note: this item was asked only of parents.)

Analytic Strategy

The framework guiding the analyses for each scale is developed here using the sexuality topic scale as an example. The fundamental logic and approach applies to the other scales as well. The model to be used assumes that the frequency of communication for a given topic is impacted by two major determinants, (1) a generalized tendency to communicate about topics related to sexuality and (2) a more specific tendency to talk about a particular topic (as reflected by a given item) over and above the general tendency to talk about sexual topics. The general tendency to communicate about sexuality is represented by a single, latent factor underlying all the scale topics, with the factor loadings for each individual item on that factor estimating the strength of the impact of the general tendency to communicate about sex on that topic. The second set of influences are captured by the unique variance associated with a specific topic/item in the context of a factor analysis. These unique variances might exhibit modest correlations for certain item subsets that reflect additional common influences on those items independent of the dominant single latent variable associated with generalized communication. It is hypothesized that (1) there will be relatively strong factor loadings across topics for the single latent variable reflecting a generalized communication tendency about sexual topics, (2) that there will be low to moderate unique variances associated with each topic/item, and (3) that there will be modest correlated errors among selected items that reflect additional common

causes over and above the generalized tendency to communicate about sex. These hypotheses are tested using confirmatory factor analysis that fits a single factor model to the data and allows for the possibility of correlated errors. If the hypotheses bear out, then items for a scale can be aggregated (e.g., averaged) to form an overall index of the general tendency to communicate about topics related to sexuality for use in future research. Depending on the magnitude of the unique variances, certain topics/items may be of interest in their own right independent of the general tendency to communicate about sex. For the theory-based scale, there is a similar generalized tendency to communicate about sexuality in a manner that aligns with the Unified Theory of Behavior. For barriers, the underlying generalized tendency is that specific barriers act collectively in relation to communication about sexuality.

In order to evaluate the proposed two component model consisting of a single dominant factor and unique variance, the author worked with Mplus 7. For confirmatory factor analysis, it is the optimal software as it provides global fit indices, focused fit indices, as well as estimates of the standardized factor loadings, unique variances, and correlated errors. Use of a robust estimator is relatively simple and was required due to non-normality in the data and the use of weights. In addition, the author reviewed the descriptive statistics for the individual scale items, the correlations between the individual scale items, and the confidence intervals and margin of errors of all estimates. The analyses were performed both with and without the sampling weights provided by Gfk to examine how the weights impacted results. Fit indices were stronger using the weights and thus, the weighted analyses are presented here.

Following the analysis of the main scales, the author examined multi-group solutions for the scales to determine whether or not measurement invariance existed across White, African American and non-White Latino parents and teens, as well as between mothers and fathers and

between teen males and females. Mplus 7 was able to accommodate these analyses easily and all the same parameters and indices previously described could be evaluated in order to ascertain whether the factor structure differed at all by gender or race/ethnicity. For any pathways that significantly varied by gender or by race/ethnicity, the modified Holm-Bonferroni method was used to accommodate multiple comparisons given the numerous comparisons across items. The modified Holm-Bonferroni method establishes significance levels based on the number of comparisons in a model. Significance considerations vary based on the number of comparisons such that the greater the number of comparisons in the model, the more stringent the threshold for significance. In addition, for any scales with significant differences in the pathways by race/ethnicity or gender, both constrained and unconstrained models were run and the resulting CFI was analyzed. Any difference in CFI greater than .01 between the constrained and unconstrained runs was considered a significant difference between how the scale is operating between groups.

Results

Preliminary Analyses

The mean age at which parents report they began talking to their children about topics related to sexuality was 12.14 years old. The mean age at which adolescents report that conversations with their parents began was 13.33 years old. A paired t-test of dependent samples confirmed that this is a statistically significant difference in reports between parents and teens. Means and standard deviations for parents and teens on the topic communication items, the barriers items and the theory-based items are included in Tables 1-3. The mean frequency of communication about topics related to sexuality was low, with a range of conversations from 2.61 conversations about “where to get reproductive healthcare services” to

5.38 on "peer pressure" reported by teens. On average, parents report more communication about each topic than teens. Parents report a range of conversations about theory based topics from a low of 3.47 on "whether [name of child] thinks of [himself/herself] as someone who is ready for a sexual relationship" to a mean of 5.52 on "reasons to avoid getting pregnant or impregnating someone while a teenager." Overall agreement with potential barriers to communication about sexuality was also low, ranging from a mean of 2.52 on "my father/mother doesn't have enough information to talk to me about these topics" to a mean of 4.41 on "my father/mother thinks the schools do a good job of teaching me what I need to know about sex.

Confirmatory Factor Analyses

Initial examination of the underlying single factor model without correlated errors included all variables in each category (i.e., topic communication, barriers to communication and theory-based communication), with each category and each source (parents or adolescents) analyzed separately. Global fit indices for the initial scales including all items are presented in Table 4. In each case, the indices point towards models with reasonable fit, but not adequate fit. In all cases, the χ^2 is significant; however, χ^2 is sensitive to sample size, which is the likely driver of these results. The lack of adequate fit was due to the need to accommodate correlated errors in the models. The standardized root mean square (SRMR) is the (positive square root) average discrepancy between the observed correlations between items minus the correlations predicted by the model. A perfect model would yield an index of 0.0 and can range up to 1.0, so the smaller the value, the better the model fit. The guideline for good fit is .08 or below

(Bollen & Long, 1997). All of the initial scales reflect a good fit on the SRMR. The RMSEA measures the extent to which the model fits reasonably well in the population (like the SRMR), but includes a penalty function for lack of parsimony. A reasonable fit criterion for RMSEA is .08 or below (Bollen & Long, 1997). All of the models were reasonable in terms of this fit index. The Comparative Fit Index (CFI) compares the model to an independence model (a model that assumes lack of correlation among all variables) and can range from 0.0 to 1.00, with values closer to 1.0 indicating better fit. Values above 0.95 typically indicate good model fit (Bollen & Long, 1997). The theory-based communication scale has good fit on this index, but the other scales were initially suboptimal.

For the parent topic communication scale, the global indices of model fit were χ^2 (65)=638.073, $p < .001$), SRMR = .044, CFI = .912, RMSEA = .073.

For the child topic scale, they were χ^2 (65)=517.966, $p < .001$), SRMR = .065, CFI = .919, RMSEA = .040.

For the parent barriers scale they were χ^2 (20)=183.261, $p < .001$), SRMR = .068, CFI = .887, RMSEA = .068.

For the child barriers scale they were χ^2 (14)=121.775, $p < .001$), SRMR = .068, CFI = .887, RMSEA = .068. For the parent theory based communication scale, they were χ^2 (44)=239.581, $p < .001$), SRMR = .021, CFI = .962, RMSEA = .052.

Global fit indices are also included in Table 4.

An examination of focused fit indices, including the modification indices, which evaluate possible additions of paths or correlated errors that may improve model fit, indicated that the addition of several correlated errors would likely improve overall model fit. The author initially focused on the modification indices with the highest values and added paths

sequentially that made conceptual sense. As a basic rule of thumb, large modification indices that stood out relative to others (e.g., a MI of 30, given the large sample size) were examined first. Then, the author considered if there was a substantive or theoretical reason to add the correlated errors indicated by the high modification indices. When both the modification indices and a substantive or theoretical reason were present, correlated errors were included in the model, as long as those correlations were small to moderate in magnitude.

Topic Communication Scales

For the parent and teen communication scales, the modification indices suggested that several items had correlated errors that merited inclusion in a revised model. The errors that were correlated were for items 2 and 5 ("puberty and changes that occur physically, socially and emotionally during the teen years" and "similarities and differences between boys and girls/men and women"), items 4 and 13 ("how to deal with peer pressure" and "how to stay safe during online activities such as social networking"), items 8 and 9 ("birth control methods" and "how to prevent sexually transmitted diseases, including HIV), items 8, 10 and 11("birth control methods", "where to get reliable information about sexual health" and "where to get reproductive healthcare services") and items 8 and 11 ("birth control methods" and "where to get reproductive healthcare services"). In general, the magnitude of the correlations was small to moderate. Each correlation made conceptual sense as each of the topics with correlated errors is closely related to the other items. For example, conversations about puberty are likely to include discussions of the similarities and differences in pubertal changes for males and females, conversations about birth control are likely to include information about where to get birth control, and conversations about birth control/preventing pregnancy are likely to overlap with conversations about how to prevent sexually transmitted diseases. The model was refit to

the data including correlated errors for these items. The global fit indices improved considerably:

Parent: (χ^2 (59)=251.553, p < .001), SRMR =0 .03, CFI =0 .97, RMSEA =0 .04.

Teen: (χ^2 (59)=202.509 p < .001), SRMR = 0.03, CFI = 0.97, RMSEA = 0.03.

See Table 4 for global fit indices for both the original and the refitted models.

Theory Based Communication Scale

The theory-based communication scale, displayed the best goodness of fit of any of the original scales. Examination of the error variances for two items in the theory-based scale: "reasons to avoid getting pregnant or impregnating someone else while a teenager" and "reasons to avoid getting a sexually transmitted disease" suggested that some of the covariance in these facets of communication were not accounted for by the underlying latent variable. This is logical as both items center on avoiding sequelae of sex that are of great concern to parents and parents that discuss one of these issues are probably likely to discuss the other independent of other topics included in the analyses. Once correlated errors between the reasons to avoid pregnancy and reasons to avoid getting a sexually transmitted disease items were included in the theory-based analysis, the model demonstrated improved goodness of fit on both global and focused fit indicators: χ^2 (43)=150.27, p < .001), SRMR = .02, CFI = .98, RMSEA = .04. Table 4 includes the global fit indices for both the original and refitted model.

Barriers Scale

In the survey, there were eight items related to barriers asked of parents and seven items related to barriers asked of adolescents. One item: "I've already talked enough with [name] about these topics" was asked only of parents but was not included in the final scale as this item

did not fit with the other items as evidenced by small correlations with all the other scale items and low factor loading on the latent variable.

Analysis of both the parent and adolescent barriers scales showed that the errors for the two items related to "embarrassment": "I would be embarrassed talking to [name] about these topics" and "I'm concerned that [name] would be embarrassed if I talked to [him/her] about these topics" should be correlated. This may have occurred due to the wording of the items being similar; parents or adolescents that perceive themselves as being embarrassed by conversations about sexuality might also perceive the other person to be embarrassed, and the answer in the first item might have had a priming effect on the answer to the next item. The potential barriers scale was thus modified in two ways: once by allowing the errors for the embarrassment items to correlate and once dropping the item reporting on the other person's embarrassment. Fit indices for the model dropping the report on the other person's embarrassment were stronger:

Parent barriers without "talked enough" and "child would be embarrassed" items: χ^2 (9)=46.745, $p < .001$), SRMR = .035, CFI = .941, RMSEA = .050

Teen barriers without "parent would be embarrassed" χ^2 (5)=39.171, $p < .001$), SRMR = .032, CFI = .948, RMSEA = .045. Global fit indices for both the original and re-fitted models are included in Table 4.

Factor Loadings, Explained and Unique Variance and Correlated Errors

The standardized factor loadings, variance in items explained by the general communication factor and the unique communication variance associated with each scale item are included in Tables 5-7 and Figures 1-3. The proportion of each item that is accounted for by the underlying latent variable represents the explained variance and the unexplained variance is

the portion of each variable that is not accounted for by the latent variable. The consistent high proportion of explained variance by the single latent factor for the three communication scales suggests that the items can be appropriately aggregated into a single overall score when researchers are interested in measuring the general tendency to talk about sexuality topics or the general tendency to talk about theory-based topics. The barriers scale, however, had high levels of unique variance associated with each item (63%-79% of each item explained by unique variance rather than the underlying latent factor), suggesting that the barriers reflected by each item might be informative in their own right and that items are not appropriately utilized in a scale. (See Table 7 for explained and unique variance for barrier items.)

As noted, correlated errors were added to the topic and theory-based communication scales to accommodate items that shared common measurement error. One correlation between errors was added to the theory scale and six were added to the parent and teen topic scales (note: the same correlations were added to both the parent and teen scales). All correlations were 0.46 or lower, indicating that the addition of these correlated errors, though substantively relevant and resulting in improved model fit, were not so high that they interfered with measuring general communication constructs. The correlated error on the theory-based scale between reasons to avoid pregnancy and STIs was 0.46, high enough to suggest a relationship which may be due to the content of the conversations, but low enough to show that the different topics should indeed be represented separately (e.g., the items do not measure the same thing). The values of correlated errors on the parent and teen topic communication scales were generally quite similar indicating similar levels of measurement error for the topic communication scale items across the two groups. Items dealing with puberty and peer pressure correlated 0.34 for parents and 0.38 for teens. Shared error variance may be attributed to the fact that parents see

peer pressure as strongly associated with becoming an adolescent and puberty as signaling the transition to adolescence. Peer pressure and staying safe online correlated 0.30 for parents and 0.33 for teens. Since both items deal with issues of safety, that may account for the similar measurement errors. Correlated errors existed between discussion of birth control methods and discussions about where to obtain reproductive health care services (0.38 on parent scale, 0.31 on teen scale), as well as between where to get reliable information about sexual health (0.28 on parent scale and 0.25 on teen scale), and how to prevent STIs (0.36 on the parent scale and 0.36 on the teen scale). Discussion of birth control logically shares commonalities outside the model with where to get additional information about birth control and with places to obtain reproductive healthcare services such as birth control. An additional error between where to get reliable information about sexual health and where to obtain reproductive health care services correlated 0.40 for parents and 0.49 for teens. Where to obtain additional information and services are substantively linked so this correlation makes substantive sense.

Measurement Invariance

Examination of how the psychometric properties of the model change when examining sample subgroups separately requires testing to determine if the unique variances and factor loadings vary across groups (Brown, 2006). CFA is useful for this purpose. The data set provided an opportunity to assess fit across Black, Hispanic and White respondents and by gender for both parent and teen scales given sufficient sample size in each of the subgroups.

In order to assess measurement invariance in factor loadings for each version of the scales, Mplus 7 was used to test for differences between groups using standard multiple group methodology for structural equation modeling. This focused on CFI difference tests for models where a given loading was constrained to be equal across groups as compared with models in

which the factor loading was not constrained. Statistically significant CFI differences indicate differential loadings across groups.

If statistically significant differences were found in any of the pathways in the models by race/ethnicity or gender, the results were subject to the modified Holm-Bonferroni method for examining multiple contrasts to adjust for inflated familywise error rates. The modified Holm-Bonferroni method uses a critical alpha of .05/(c-1), in which "c" represents the number of contrasts. Tables were created listing the contrasts from most to least significant p-value and then held to a new critical alpha (.05/(c-1). For any scale in which any pathway had a significantly different path, the scale was run both constrained and unconstrained paths and the difference in the comparative fit index (CFI) from the was examined. If the difference was greater than 0.01, there was a meaningful difference in loadings on the scale (Cheung, 2002). All analyses focused on standardized coefficients (i.e., standardized factor loadings and unique variances). Each multi-group model had at least one, and at most five, significant differences in factor loadings on scale items between the comparison groups. Using the method described, all scales demonstrated measurement invariance after analyzing both the pathways and the CFI test of difference. Table 8 includes all results from the modified Holm-Bonferroni analyses.

Theory Based Scale: Assessment of Measurement Invariance

Analyses to compare the theory-based scale by race/ethnicity found that there were no significant differences in either the factor loadings between the Black and Hispanic parents, White and Hispanic parents or between Black and White parents. Given that there were no statistically significant differences in the pathways between the variables and the latent variable, we can conclude that this scale demonstrates sufficient measurement invariance across and race/ethnicity. When assessing the scale for fathers compared to mothers, there were no

significant differences for any of the paths between the variables and the latent variable nor in the unique variance terms indicating measurement invariance for mothers and fathers.

Topic Communication: Assessment of Measurement Invariance

The assessment of measurement invariance by race/ethnicity for the parent topic communication scale showed that when comparing Black and Hispanic parents, there was one factor loading in which there was a significant difference, the loading for variable 3 "healthy and unhealthy romantic relationships" and the latent communication variable. All significant contrasts were examined for a more stringent level of significance using the previously described modified Holm-Bonferroni method. See Table 8 for the individual contrasts by scale. In general, factor loading differences between groups did not remain significant under the modified Holm-Bonferroni method. However, two loadings on the parent scale comparing Whites and Hispanic parents did remain significant and thus the CFI difference test was utilized. In the unconstrained model the CFI was 0.969 and in the constrained model the CFI remained the same, which confirmed measurement invariance. This demonstrates that, the scale itself did not vary for White compared to Hispanic parents suggesting that the differences on these loadings were not significant enough to make the overall scale operate differently for White and Hispanic parents.

For White compared to Black parents, there was one difference in one loading, on variable 4 "how to deal with peer pressure." Thus, the CFI difference was assessed. The CFI in the unconstrained model was 0.945 compared to 0.944 in the constrained. Because this difference was less than 0.01, this scale did not operate differently for White parents compared to Black parents. For White compared to Hispanic parents, there were five statistically significant differences in the pathways representing factor loadings for variables 2, 3, 5, 7, and

9. The unconstrained CFI was 0.959 and the constrained was 0.957, which once again was a value below the .01 threshold indicating no significant difference in the scale for White parents compared to Hispanic parents. From these results, it is concluded that the topic communication scale does demonstrate strict measurement invariance across racial and ethnic groups. For the adolescent communication scale, assessment for sub-groups showed that there were no significant differences in the pathways between Black and Hispanic teens. There were also no significant differences in the paths between White and Black teens. For White compared to Hispanic teens, there was one difference in the pathway between the variable and the latent variable for item 10, "where to get reliable information about sexual health". The CFI stays the same (0.967) in the constrained and unconstrained models, which confirms measurement invariance for the overall scale.

For mothers compared to fathers, there are no significant differences in the pathways between the variables in the scale and the latent variable. The overall global fit indices and the fact that there were not differences in the factor loadings indicate that this scale demonstrates measurement invariance between fathers and mothers.

For male compared to female teens, there were no differences in the factor loadings between the observed variables and the latent variable. There was one difference in the unique variance for topic item 12, "sexual orientation" for which males had larger unique variances. Because the difference was in the error term and not in the pathway, the topic communication scale demonstrated sufficient measurement invariance by gender for teens.

Barriers Scales: Analysis of Measurement Invariance

For parents the analysis of measurement invariance for the barriers scale shows that for Black compared to Hispanic parents, there were no differences in any of the pathways between

the variables and the latent variable but there were differences in four of the unique variances, for variables 1, 5, 6 and 8 with all showing that there was more unique variance for Black parents than for Hispanic parents. Again, all significant contrasts were examined to a more stringent level of significance using the modified Holm-Bonferroni method and those results are included in Table 8.

For White parents compared to Black parents, there was one difference in a pathway between a variable and the latent variable, for variable 2, "I would be embarrassed talking to [name] about these topics." The CFI was 0.797 on the unconstrained model and 0.798 on the constrained model, so the scale demonstrates measurement invariance. For White parents compared to Hispanic parents, there were no differences in the pathways. For fathers compared to mothers, there were no differences in the pathways and one difference in the unique variance for variable 8 on which mothers had larger unique variances. Thus, the barriers scale demonstrated sufficient measurement invariance by gender and across all racial/ethnic groups.

For teens, for Black compared to Hispanic adolescents, there were no significant differences in the pathways. For White compared to Black teens, there were no differences in the pathways. For White compared to Hispanic teens, there were no differences in the pathways. For male and female teens, there were no differences in the pathways. Thus, there are no gender effects for these scales. Of note, there are fewer differences in the scale effects for adolescents based on race/ethnicity than for parents, although the differences are minimal.

Correlations Between the Scales

The scales themselves were correlated in order to measure whether the scales were measuring distinct latent variables or whether the scales may actually be tapping into a universal underlying construct. The correlation between the parent and teen versions of the topic

communication scale was 0.8, which suggests that the scales are measuring the same latent construct across the two groups.

The high correlations between the theory-based and topic communication scales indicate that there may be issues of collinearity and that a tendency to communicate about topics related to sexuality likely underpins both scales. Subsequent work using the scales (see Kantor Paper 2) shows that neither the topic or theory-based communication scales is more strongly associated with behavioral outcomes, so choice of which scale to use is appropriately determined by the particular type of communication a researcher would like to examine. However, the theory-based scale still needs to be utilized with teens and subjected to confirmatory factor analysis to determine if the strong psychometric properties hold.

Discussion

Utilizing data from 1,663 parents and 1,663 adolescents from the same households, this research evaluated the psychometric properties of five new potential scales to measure parent-child communication about sexuality. A model was tested for each scale that allowed for a single common factor reflecting generalized communication tendencies coupled with unique communication tendencies for each topic over and above this generalized tendency. Modeling also allowed for correlations among the unique tendencies. The final scales demonstrate strong global fit with the model for both parents and adolescents. A high percentage of the explained variance for each observed item in the communication scales was due to the underlying latent construct suggesting that it is appropriate to aggregate the items on the topic communication and theory-based scales. However, the barriers items do not seem to measure the same underlying construct as demonstrated by the high percentage of unique variance for each of the

items, which suggests that the barriers items should not be aggregated and should be considered in their own right.

All of the scales demonstrate measurement invariance for Black, Hispanic and White parents and adolescents and by gender for parents and adolescents. Measurement invariance ensures that the scales are capturing the same underlying construct for varying groups. The measurement invariance analyses indicate that these scales are appropriate for use with Black, Hispanic and White samples as well as for both males and females. There were a few significant differences in pathways between racial/ethnic groups at the .05 level, but there were only a few and the differences were not strong and did not hold up to more stringent significance levels for multiple comparisons using the modified Holm-Bonferroni method. Further, these pathway differences did not change the measurement of the overall scale as evidenced by the CFI difference tests.

These new scales have the potential to bring greater consistency to the measurement of parent-child communication in research on communication about sexuality when the focus is on the generalized tendency to communicate. Very few studies have allowed for direct comparison of measures among racial/ethnic groups because of a dearth of samples that include adequate numbers of White, Black and Hispanic participants to allow for direct comparisons. In addition, even fewer studies have looked at measurement invariance for scales related to communication about sexuality by gender for mothers and fathers as well as adolescent males and females. Thus, these scales represent an important contribution to research on parent-child communication about sexuality by introducing a set of communication scales with strong psychometric properties. However, further work is needed to establish whether these scales have adequate reliability and validity.

Limitations

There are several limitations to this study. The cross-sectional nature of the data set does not allow for measurement of the scales over time with the same sample. The scales also have not yet been subjected to a range of reliability and validity testing but only to the confirmatory factor analysis described in this paper.

In addition, there are some ways in which the parent and adolescent samples in this data set vary from the population as a whole, even when weights were applied. The parent sample is more likely to be married across every racial/ethnic group than those sub-groups are in the population as a whole. Household income is also higher than in the general population. The teens in the sample are less sexually active than teens have been found to be in nationally representative surveys such as the Youth Risk Behavior Survey and the National Survey of Family Growth. However, the size of the sample as well as the inclusion of sufficient numbers of African-American, Latino, and White subjects and mothers and fathers, male and female teens, makes this a very valuable sample on which to test new potential scales for measuring communication about sexuality.

Conclusion

This research examines five potential scales, three for parents and two for adolescents, which measure communication about sexuality topics, communication about theory-based topics and barriers to communication about sexuality. The communication scales demonstrate strong psychometric properties including measurement invariance across mothers and fathers and teen males and females and by race/ethnicity among White, Black and Hispanic parents and teens. The scales need to be validated by testing them with additional samples to establish their test-retest reliability and their generalizability. The barriers scales showed that the individual

items did not measure the same underlying construct and thus should be used in future research on their own rather than aggregated into a scale. These scales can help to improve the measurement of family communication about sexuality, an area with important implications for program interventions and public guidance.

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Tables

Table 1: Means and Standard Deviations for Sexuality Topics, Teen and Parent

Topic	Teen mean	Teen SD	Parent mean	Parent SD
1. Reproduction and how babies are made	3.95	4.11	3.95	3.97
2. Puberty and changes that occur physically, socially and emotionally during the teen years	4.64	4.19	5.12	4.15
3. Healthy and unhealthy romantic relationships	4.13	4.24	4.63	4.30
4. How to deal with peer pressure	5.38	4.32	6.34	4.20
5. Similarities and differences between boys and girls/men and women	4.44	4.20	4.74	4.11
6. Specific strategies for saying no to sexual activity	3.62	4.26	3.94	4.29
7. The importance of never pressuring anyone into doing something sexually that they don't want to do	4.30	4.37	4.48	4.37
8. Birth control methods	3.33	4.12	3.26	4.03
9. How to prevent sexually transmitted diseases, including HIV	3.98	4.37	4.11	4.38
10. Where to get reliable information about sexual health	3.12	3.94	3.21	3.91
11. Where to get reproductive healthcare services	2.61	3.81	2.35	3.58
12. Sexual orientation (e.g. information about being straight, gay, lesbian, or bisexual)	4.08	4.16	4.29	4.18
13. How to stay safe during online activities such as social networking (such as Facebook)	5.38	4.42	5.86	4.33
Communication Scale	4.07	3.46	4.86	4.39

Table 2: Means and Standard Deviations, Parent Theory-Based Items

Topic	Mean	SD
1. What to expect from sexual relationships.	3.56	4.17
2. The advantages and disadvantages of waiting until [she/he] is older to engage in sex.	4.72	4.41
3. How common sexual behavior is among people [his/her] own age.	3.82	4.19
4. Whether or not [Name] thinks of [herself/himself] as someone who is ready for a sexual relationship.	3.47	4.18
5. The kinds of emotions that can accompany having sex.	3.69	4.21
6. The advantages and disadvantages of having sex.	3.78	4.23
7. The kinds of emotions that can accompany waiting until you are older to have sex.	4.06	4.36
8. How confident [Name] is about following through on the decisions [she/he] has made about sex.	4.06	4.36
9. Reasons to avoid getting pregnant or impregnating someone else while a teenager.	5.52	4.57
10. Reasons to avoid getting a sexually transmitted disease.	4.86	4.57
11. What to do if [she/he] is ever pressured to do something sexually that s/he doesn't want to do.	4.84	4.39
Theory-based scale	4.21	3.81

Table 3: Means and Standard Deviations, Parent and Teen Barrier Items

Item	Parent mean	Parent SD	Teen mean	Teen SD
1. Name] is too young for me to talk about these topics with. (Teen: I am too young for my father/mother to talk about these topics with me.)	3.82	3.33	3.72	3.32
2. I would be embarrassed talking to [name] about these topics. (Teen: My father/mother would be embarrassed talking to me about these topics.)	2.81	2.58	3.70	3.20
3. I'm concerned that [name] would be embarrassed if I talked to him/her about these topics." (Teen: I would be embarrassed if my [father/mother] talked with me about these topics.	3.90	2.98	4.97	3.35
4. I think it is better if [name]'s other parent talks to him/her about these topics. (Teen: My father/mother leaves it to my other parent to talk about these topics with me.)	3.23	3.10	3.18	3.05
5. I don't have enough information to talk with [name] about these topics. (Teen: My father/mother doesn't have enough information to talk to me about these topics.)	2.40	2.25	2.52	2.33
6. I don't think my friends talk to their children about these topics. (Teen: My father/mother thinks other parents don't talk to their children my age about these topics.)	3.22	2.57	3.50	2.84
7. [Note: This item was asked only of parents] "I've already talked enough with [name] about these topics"	4.82	3.13	Not asked	Not asked

Table 4: Global Fit Indices for Original and Refitted Scales

Fit Index	PTopic	CTopic	PTheory	PBarriers	CBarriers
Initial Model					
χ^2	638.07 df = 65	517.97 df 65	239.58 df = 44	183.26 df = 20	121.78 df= 4
RMSEA	0.07	0.04	0.05	0.06	0.07
CFI	0.91	0.92	0.96	0.87	0.96
SRMR	0.04	0.06	0.02	0.04	0.07
Refitted Models					
χ^2	251.55 df = 59	202.51 df = 59	150.27 df = 43	46.74 df = 9	39.17 df = 5
RMSEA	0.04	0.04	0.04	0.50	0.04
CFI	0.97	0.97	0.98	0.94	0.95
SRMR	0.03	0.03	0.02	0.03	0.03

Table Notes: PTopic = Parent ratings of communication about topics; CTopic = Child ratings of communication about topics; PTheory = Parent ratings of theory based communication topics; PBarriers = Parent ratings of communication barriers; CBarriers=Child ratings of communication barriers

Table 5: Standardized Factor Loadings, Explained and Unique Variance for Parent and Teen Topic Communication Scales

	Parent Ratings				Teen Ratings		
Facet/Item	**SFL**	**EV**	**UV**		**SFL**	**EV**	**UV**
Reproduction and how babies are made	0.81	0.66	0.34		0.85	0.72	0.28
Puberty and changes that occur physically, socially and emotionally during the teen years	0.78	0.60	0.40		0.80	0.64	0.36
Healthy and unhealthy romantic relationships	0.83	0.69	0.31		0.87	0.76	0.24
How to deal with peer pressure	0.68	0.46	0.54		0.74	0.55	0.45
Similarities and differences between boys and girls/men and women	0.75	0.56	0.44		0.79	0.63	0.37
Specific strategies for saying no to sexual activity	0.85	0.72	0.28		0.85	0.72	0.28
The importance of never pressuring anyone into doing something sexually that they don't want to do	0.84	0.71	0.29		0.85	0.73	0.27
Birth control methods	0.77	0.59	0.41		0.80	0.65	0.35
How to prevent sexually transmitted diseases, including HIV	0.85	0.73	0.27		0.87	0.76	0.24
Where to get reliable information about sexual health	0.84	0.72	0.28		0.84	0.71	0.29
Where to get reproductive healthcare services	0.75	0.57	0.43		0.82	0.67	0.33
Sexual orientation (e.g. information about being straight, gay, lesbian, or bisexual)	0.77	0.60	0.40		0.80	0.65	0.35
How to stay safe during online activities such as social networking (such as Facebook)	0.70	0.49	0.51		0.72	0.52	0.48

Table Notes: SFL = Standardized Factor Loading; EV = Explained Variance--proportion of variance in facet/item explained by the general communication factor; UV = Unique Variance--proportion of unique variance in facet/item

Table 6: Standardized Factor Loadings, Explained and Unique Variance for Theory Based Scale

	Parent Ratings		
Facet/Item	**SFL**	**EV**	**UV**
What to expect from sexual relationships.	0.90	0.82	0.18
The advantages and disadvantages of waiting until {he/she} is older to engage in sex.	0.89	0.79	0.21
How common sexual behavior is among people {his/her} own age.	0.88	0.77	0.23
Whether or not {Name} thinks of if {himself/ herself} as someone who is ready for a sexual relationship.	0.86	0.75	0.25
The kinds of emotions that can accompany having sex.	0.89	0.79	0.21
The advantages and disadvantages of having sex.	0.87	0.76	0.24
The kinds of emotions that can accompany waiting until you are older to have sex.	0.89	0.80	0.20
How confident {Name} is about following through on the decisions {he/ she} has made about sex.	0.87	0.75	0.25
Reasons to avoid getting pregnant or impregnating someone else while a teenager.	0.83	0.68	0.32
Reasons to avoid getting a sexually transmitted disease.	0.88	0.77	0.23
What to do if {he/ she} is ever pressured to do something sexually that s/he doesn't want to do.	0.82	0.67	0.33

Table Notes: SFL = standardized factor loading; EV = proportion of variance in facet/item explained by the theory based communication factor; UV = proportion of unique variance in facet/item

Table 7: Standardized Factor Loadings, Explained and Unique Variance for Communication Barriers Scales

	Parent Ratings			Teen Ratings		
Facet/Item	**SFL**	**EV**	**UV**	**SFL**	**EV**	**UV**
[Name] is too young for me to talk about these topics with.	0.29	0.08	0.92	0.46	0.21	0.79
I would be embarrassed talking to [name] about these topics.	0.76	0.57	0.43	0.61	0.37	0.63
I think it is better if [name]'s other parent talks to him/her about these topics.	0.60	0.36	0.64	0.54	0.30	0.70
I don't have enough information to talk with [name] about these topics.	0.66	0.44	0.56	0.60	0.36	0.64
I don't think my friends talk to their children about these topics.	0.54	0.29	0.71	0.60	0.36	0.64
I think the schools do a good job of telling [name] what s/he needs to know about these topics.	0.45	0.20	0.80	0.49	0.24	0.76

Table Notes: SFL = standardized factor loading; EV = proportion of variance in facet/item explained by the general barriers factor; UV = proportion of unique variance in facet/item explained by the barriers factor

Table 8: Modified Holm-Bonferroni Table for Pathways with Differences by Race/Ethnicity

Parent barriers white-black

Contrast	Mean Difference	P value	Critical alpha	Reject Null?
Pdiff2	-1.848	0.043	0.010 (.05/5)	No
Pdiff4	-1.620	0.072	0.0125 (.05/4)	No
Pdiff8	-1.044	0.089	0.0167 (.05/3)	No
Pdiff6	-0.451	0.360	0.025 (.05/2)	No
Pdiff8	-2.177	0.390	0.05 (.05/1)	No

Parent communication white-hispanic

Contrast	Mean Difference	P value	Critical alpha	Reject Null?
PDIFF3	-0.289	0.000	0.004 (.05/12)	Yes
PDIFF7	-0.238	0.002	0.005 (.05/11)	Yes
PDIFF9	-0.197	0.010	0.005 (.05/10)	No
PDIFF2	-0.133	0.034	0.006 (.05/9)	No
PDIFF5	-0.145	0.034	0.006 (.05/8)	No
PDIFF8	-0.154	0.065	0.007 (.05/7)	No
PDIFF4	-0.137	0.070	0.008 (.05/6)	No
PDIFF12	-0.072	0.275	0.010 (.05/5)	No
PDIFF10	-0.076	0.292	0.0125 (.05/4)	No
PDIFF6	-0.041	0.586	0.0167 (.05/3)	No
PDIFF13	-0.040	0.619	0.025 (.05/2)	No
PDIFF11	0.036	0.661	0.050 (.05/1)	No

Parent communication black-hispanic

Contrast	Mean Difference	P value	Critical alpha	Reject Null?
PDIFF3	-0.155	0.050	0.004 (.05/12)	No
PDIFF10	-0.114	0.138	0.005 (.05/11)	No
PDIFF9	-0.110	0.161	0.005 (.05/10)	No
PDIFF7	-0.093	0.258	0.006 (.05/9)	No
PDIFF11	-0.078	0.350	0.006 (.05/8)	No
PDIFF8	-0.078	0.350	0.007 (.05/7)	No
PDIFF4	0.065	0.458	0.008 (.05/6)	No
PDIFF13	-0.034	0.682	0.010 (.05/5)	No
PDIFF12	-0.029	0.695	0.0125 (.05/4)	No
PDIFF5	-0.012	0.885	0.0167 (.05/3)	No
PDIFF6	0.007	0.923	0.025 (.05/2)	No
PDIFF2	0.007	0.923	0.050 (.05/1)	No

Parent communication white-black

Contrast	Mean Difference	P value	Critical alpha	Reject Null?
PDIFF4	-0.202	0.031	0.004 (.05/12)	No
PDIFF2	-0.140	0.073	0.005 (.05/11)	No
PDIFF5	-0.133	0.085	0.005 (.05/10)	No
PDIFF7	-0.145	0.111	0.006 (.05/9)	No
PDIFF3	-0.134	0.112	0.006 (.05/8)	No
PDIFF11	0.114	0.142	0.007 (.05/7)	No
PDIFF9	-0.087	0.288	0.008 (.05/6)	No
PDIFF8	-0.075	0.345	0.010 (.05/5)	No
PDIFF12	-0.043	0.532	0.0125 (.05/4)	No
PDIFF6	-0.049	0.592	0.0167 (.05/3)	No
PDIFF10	0.039	0.606	0.025 (.05/2)	No
PDIFF13	-0.006	0.940	0.050 (.05/1)	No

Teen communication white-hispanic

Contrast	Mean Difference	P value	Critical alpha	Reject Null?
PDIFF10	0.107	0.042	0.004 (.05/12)	No
PDIFF7	-0.109	0.075	0.005 (.05/11)	No
PDIFF11	0.079	0.214	0.005 (.05/10)	No
PDIFF3	-0.074	0.230	0.006 (.05/9)	No
PDIFF12	0.072	0.271	0.006 (.05/8)	No
PDIFF9	0.049	0.410	0.007 (.05/7)	No
PDIFF6	0.051	0.486	0.008 (.05/6)	No
PDIFF5	0.026	0.604	0.010 (.05/5)	No
PDIFF12	0.072	0.932	0.0125 (.05/4)	No
PDIFF4	-0.002	0.971	0.0167 (.05/3)	No
PDIFF8	-0.003	0.972	0.025 (.05/2)	No
PDIFF2	-0.001	0.981	0.050 (.05/1)	No

Figures

Figure 1

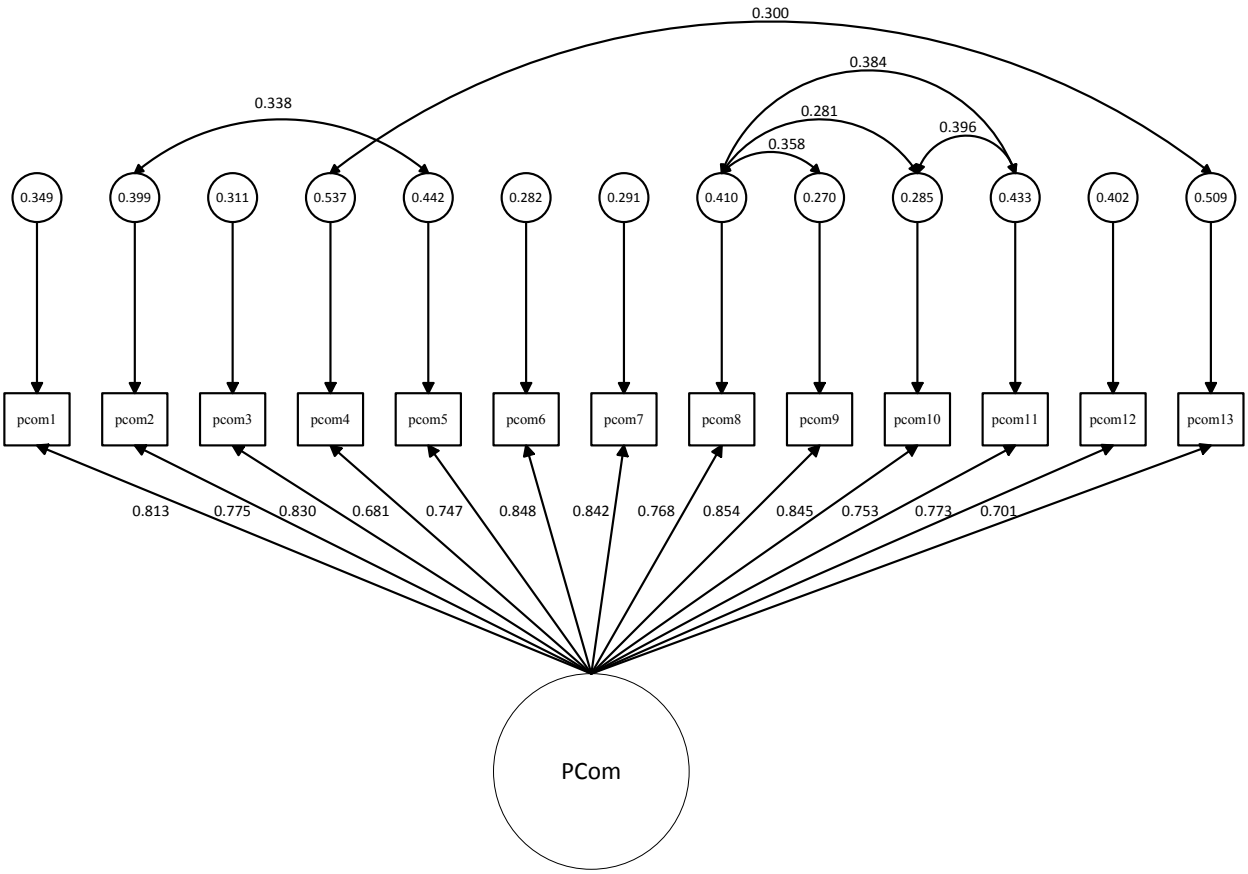

Figure 2

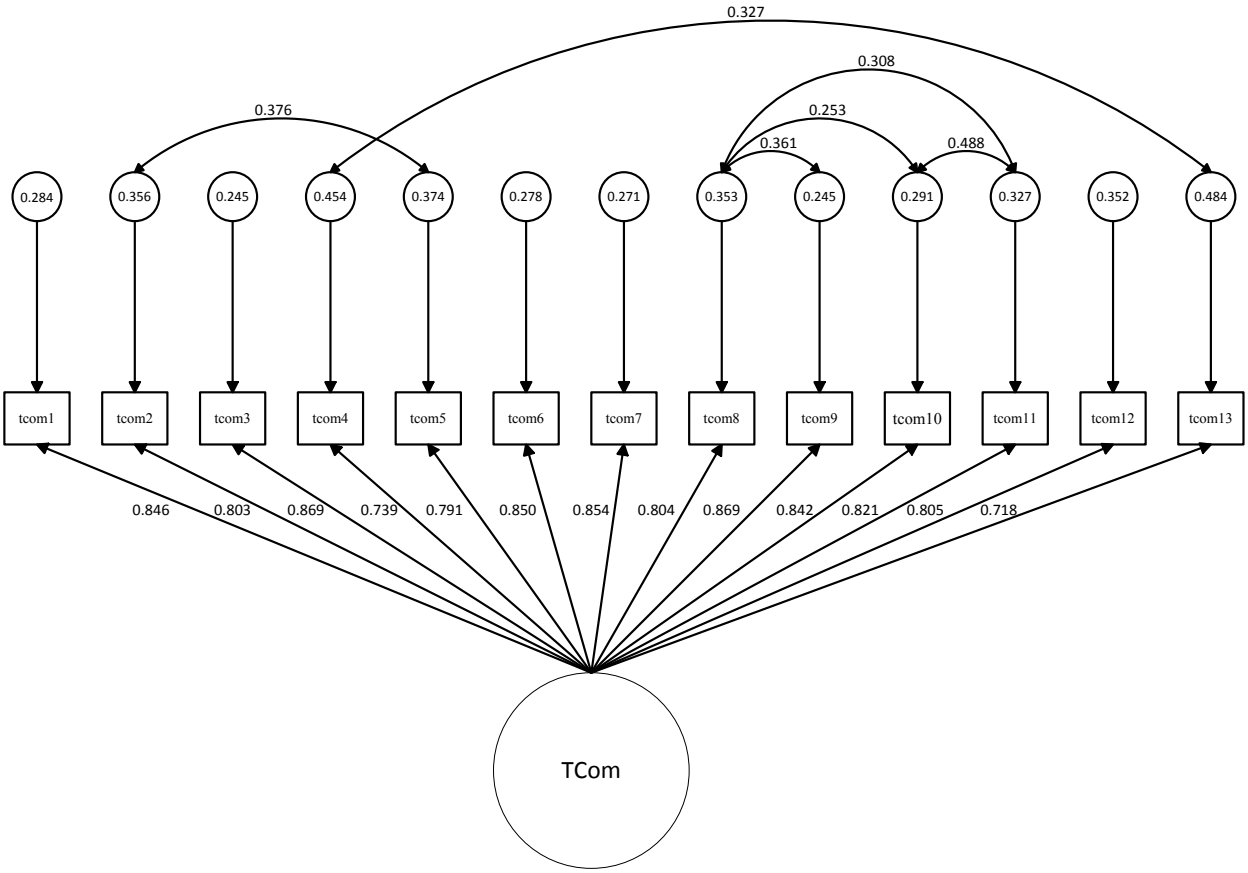
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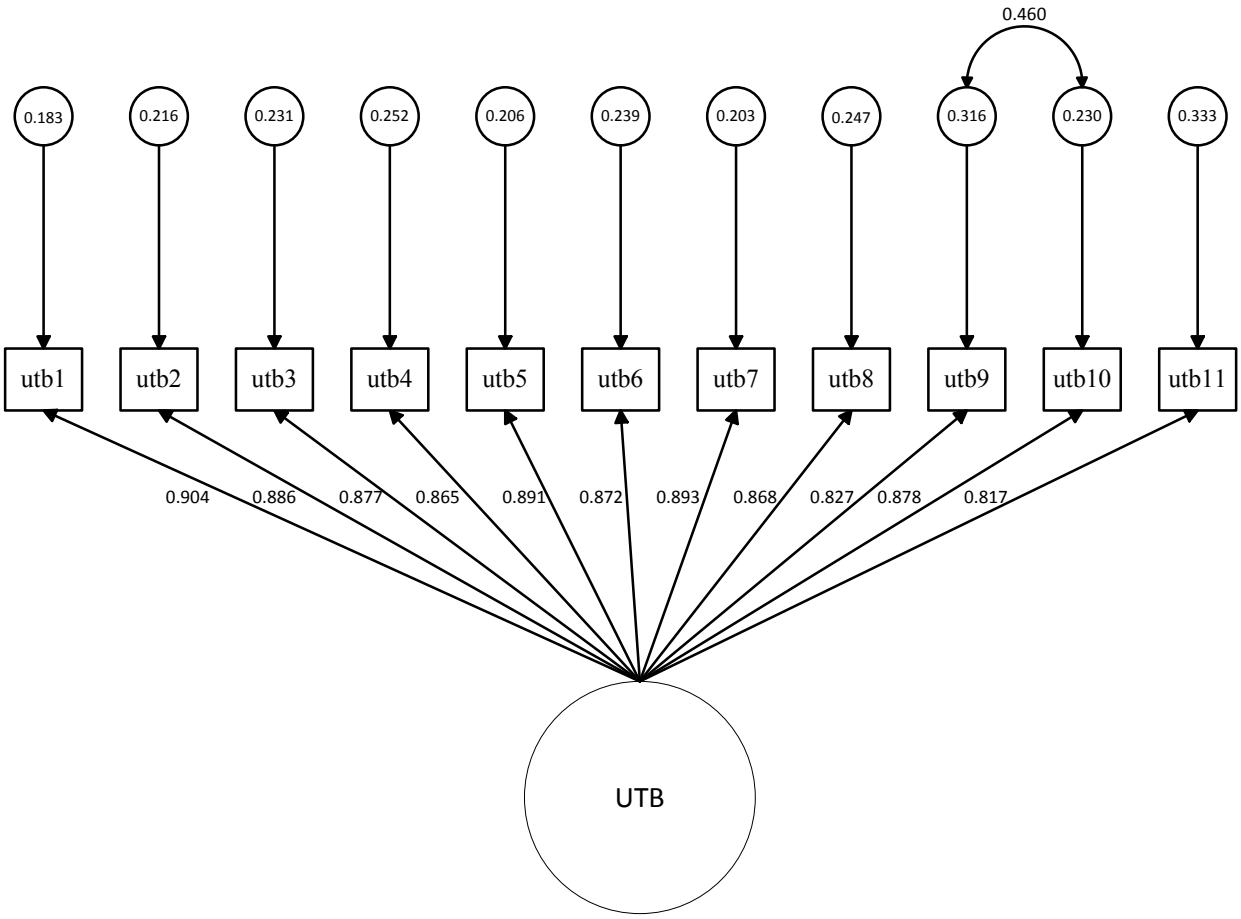
Figure 3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Parent-Child Communication About Sexuality: New Findings

Leslie M. Kantor, Columbia University

Abstract

This study of 1,663 parent-child dyads found that parents and their teenage children, ages 9-21, are talking about a variety of topics related to sexuality, as well as about topics that align with theory but the overall frequency of conversations is low. Teens report fewer conversations than parents, boys report fewer conversations than girls, and fathers report fewer conversations than mothers. Frequency of communication also varies by race and ethnicity with African American and Hispanic parents and teens reporting more conversations about sexuality than White parents and teens. Multiple barriers exist to communication and each barrier studied is significantly associated with a reduction in the frequency of parent-teen conversations about sexuality. In general, frequency of communication about sexuality is not significantly associated with any teen sexual behavior outcomes, including whether or not teens have ever engaged in any sexual behavior, whether or not teens have ever engaged in oral sex, whether or not teens have ever engaged in vaginal sex, or the consistency of condom or birth control use (other than condoms) in the past 3 months. In addition, the relationship between communication and behavior functions similarly among African American, Latino and White youth. There are a few interactions in the data that suggest possible differences in family dynamics among diverse families that merit additional study. The overall lack of association between communication and sexual behavior suggests that parent communication is limited in its ability to shift actual adolescent sexual behavior given many other salient influences for teens. However, given the low frequency of reported conversations, it may be that more frequent communication about sexuality between parents and teens would lead to behavioral outcomes. In addition, there are many important benefits of parent-child communication about sexuality beyond shifting teens' sexual behaviors such as conveying values and helping young

people to engage in healthy relationships, which may be influenced by greater breadth and more frequent communication about sexuality.

Keywords: Parent-child communication, adolescent sexual behavior

Extensive research shows that parents can influence adolescents' and young adults' decision-making about sexuality (Guilamo-Ramos, Bouris, Lee, McCarthy, Michael, Pitt-Barnes & Dittus, 2012, Markham, Lormand, Gloppen, Peskin, Flores, Low & House, 2010, Guilamo-Ramos, Jaccard & Dittus, 2010, Jaccard, Dodge & Dittus, 2002, Dittus, Jaccard, & Gordon, 1999). Parent-child communication about sexuality, in particular, is of increasing interest in the field of sexual and reproductive health from both a research and an applied perspective. A 2010 systematic review of 190 studies by Markham and colleagues on parent-child connectedness and its association with sexual and reproductive health outcomes identified 58 studies on communication about sexuality (Markham, et al., 2010). The main behavioral outcome significantly associated with parent-child communication about sexuality in longitudinal research studies overall was delayed sexual initiation for girls (Markham et al., 2010). However, a recent study on an intervention for middle school youth with a focus on facilitating parent-child communication about sex showed a larger effect on delay of sexual initiation for boys compared to girls over a three-year follow-up period (Grossman, Tracy, Charmaraman, Ceder & Erkut, 2014). A literature review on paternal influences on adolescent sexuality showed that father-adolescent communication was associated in some studies with onset of sexual behavior, but did not find evidence of associations between paternal communication and use of condoms or birth control, mainly because of a lack of studies examining paternal communication and its association with condom or birth control use (Guilamo-Ramos et al., 2012). Research on the link between parental communication and birth control use has shown some evidence consistent with both direct effects of communication on birth control use and moderating effects of communication on behavior. Hutchison (2003) found that increased mother-daughter communication about sexual risk led to a 19% reduction

in the number of episodes of unprotected (no condom) sex in the past 3 months (Hutchison, Jemmot, Jemmot, Braverman & Fong, 2003). Peer norms have been found to be more strongly associated with sexual behavior among teens who had not discussed sex or condoms with their parents suggesting that lack of communication with parents may cause adolescents to turn to peers which, in turn, influences their behavior (Whitaker & Miller, 2000).

Most parents and teens report that they have engaged in conversations about sexuality. Parents tend to report more frequent communication than their children report. As noted by Jaccard, Dodge and Dittus: "Averaging across a wide range of studies, about 70% of parents indicate that they have talked with their adolescents about sex, whereas about 50 percent of adolescents report engaging in such conversations with their parents" (Jaccard, Dodge &, Dittus, 2002). This likely reflects differences in experiences during communication and what is recalled by parents relative to children and should not be interpreted as indicating that either parents or children are more (or less) accurate in their reports. That said, most evidence suggests that teen reports of communication are more important drivers of behavior than parent reports of communication (Jaccard, Dittus & Gordon, 1998). In addition, some evidence suggests that parental communication may be motivated by teens' beginning to engage in sexual behavior so that rather than communication influencing subsequent behavior, behavior actually influences communication (Jaccard, Dodge & Dittus, 2002).

A key challenge to understanding the influence of parental communication on adolescent sexual health is that there are a wide variety of measures used, with some studies relying only on single item measures of communication (Markham et al., 2010). The current study makes use of a new set of scales developed by the author based on the same data set (Kantor, Paper 1). The final scales, on topic communication (two scales, one based on parent

data and one based on teen data) and on theory-based communication (based on parent data), demonstrate good psychometric properties and measurement invariance by gender and race/ethnicity (Kantor, Paper 1). Examination of a potential barrier scales showed that barriers demonstrate significant unique variance in confirmatory factor analyses which led to the conclusion that individual barriers should be utilized in research rather than aggregating them into an overall score. Thus, individual barrier items are utilized in this paper along with the topic communication scales for parents and teens and the theory-based scale based on parent reports. Hypotheses related to communication and to the association between communication and sexual behavior were as follows:

Hypothesis 1a: There will be comparable associations in the frequency of conversations about sex between African American, Latino and White families.

Hypothesis 1b: There will be comparable associations in the topics of conversation about sex between African American, Latino and White families.

Hypothesis 1c: There will be differences in the frequency of conversations about various topics related to sexuality with daughters compared to sons.

Hypothesis 1d: There will be differences in the specific topics discussed by parents with daughters compared to sons.

Hypothesis 2: Higher levels of reported barriers to parent-child communication about sexuality will be associated with reduced frequency of communication about sexuality related issues.

Hypothesis 3a: Greater frequency of parent-child communication about sexuality topics and theory-based topics will be associated with higher levels of any sexual activity.

Hypothesis 3b: Greater frequency of parent-child communication about sexuality topics and theory-based topics will be associated with higher levels of vaginal intercourse.

Hypothesis 3c: Greater frequency of parent-child communication about sexuality topics and theory-based topics will be associated with higher levels of oral sex.

Hypothesis 3d: Greater frequency of parent-child communication about sexuality topics and theory-based topics will be associated with more consistent use of condoms.

Hypothesis 3e: Greater frequency of parent-child communication about sexuality topics and theory-based topics will be associated with more consistent use of birth control.

Methods

The current study utilizes data collected from 1,663 parent-child dyads in July, 2014 by Gfk, Inc. Gfk, Inc. has constructed a large, diverse panel of adults in the United States. They recruit their panel using a combination of random digit dial phone techniques and address based sampling. Gfk provides weights to adjust their panel to be representative of US adults (using Community Population Survey benchmarks), with respect to key demographics (age, education, household income, Internet access, Census region, metro status, race/ethnicity, and gender). However, a preliminary analysis of the demographics of this sample with and without the weights, as well as the teen outcome behaviors, found that the weights did not fully correct for differences between the sample and the general population, particularly in regards to marital status (the Gfk panel is more likely to be married than the general population) and educational attainment (the Gfk panel is more highly educated). Because the weights did not fully correct for differences, the unweighted results are reported here. More information on the construction of the overall Gfk, Inc. panel is available at: http://www.gfk.com/us/Pages/default.aspx. Parents were sampled from the broader Gfk, Inc. panel using email invitations and asked to consent on behalf of themselves and one of their children between the ages of 9 and 21. For non-Latino White parents, a random selection of parents was invited. All Latino and African

American parents in the panel were invited to participate. An algorithm was used to request which of the parent's children to invite when a parent had more than one child in the eligible age group which was age 9-21. The organization requesting the data had a particular interest in 15-19 year olds and the algorithm was constructed accordingly. Within a household, when there was more than 1 child in the 9-21 year old age range, 15-19 year olds were selected at a 3:1 ratio (e.g. when there was a 15-19 year old and a 9-14 year old or a 20-21 year old in the same household, for every three times a 15-19 year old was selected, a non-15-19 year old was selected one time). The final sample included 749 teens ages 14 and younger, 740 teens ages 15-19, and 174 teens ages 20-21.

In addition to parental consent, children assented for their own participation. The parent questionnaire contained 91 items and the teen questionnaire contained 46 items. The median completion time was 17 minutes. Seven hundred eleven Whites, 300 African Americans and 652 Latino dyads completed the surveys. One thousand eighty one mothers and 582 fathers completed the surveys and 801 girls and 862 boys completed the surveys. Parents were asked for the name of the child that would be completing the survey and the child's name was inserted in relevant questions throughout. The teen was asked to confirm which parent had completed the survey (father or mother) and the appropriate term (father or mother) was included in appropriate items to ensure that teens were answering about their experiences with that parent.

Measures

Three sets of variables related to parent-child communication about sexuality were included in the survey: a set of variables inquiring about the frequency of discussions about various topics related to sexuality, a set of variables related to potential barriers to communication about sexuality, and a set of variables that were created based on the Unified

Theory of Behavior (Guilamo-Ramos, Jaccard, Gonzalez & Bouris, 2008, Jaccard, Dodge & Dittus, 2002). The communication variables related to sexuality topics were generated based on (a) the *Guidelines for Comprehensive Sexuality Education, K-12,* which is the primary framework for comprehensive sexuality education in the United States (National Guidelines Task Force, 2003) (b) a literature review of studies on parent and teen communication about sexuality and (c) consideration of current public policy concerns related to sexuality such as sexual assault and staying safe on social networking sites about which little is known in terms of parent child communication. There were 13 communication topic variables that were included on the parent and child surveys:

1. Reproduction and how babies are made
2. Puberty and changes that occur physically, socially and emotionally during the teen years
3. Healthy and unhealthy romantic relationships
4. How to deal with peer pressure
5. Similarities and differences between boys and girls/men and women
6. Specific strategies for saying no to sexual activity
7. The importance of never pressuring anyone into doing something sexually that they don't want to do
8. Birth control methods
9. How to prevent sexually transmitted diseases, including HIV
10. Where to get reliable information about sexual health
11. Where to get reproductive healthcare services
12. Sexual orientation (e.g. information about being straight, gay, lesbian, or bisexual)

13. How to stay safe during online activities such as social networking (such as Facebook)

For this set of topics, both parents and adolescents were asked to indicate how many times they had talked about each topic and were given answer choices that ranged from "0" to "10 or more."

A second set of variables related to communication was developed based on a synthesized framework for which significant empirical evidence exists, the Unified Theory of Behavior. The framework was developed based on a meeting convened by the National Institute of Mental Health (NIMH) in response to the fact that hundreds of studies related to health behavior were based on a small set of theories to develop a singular theory that encompassed the key principles of this set of theories. The Unified Theory of Behavior is a well-established framework for explaining both adolescent sexual behavior and parent-child communication about sexuality (Jaccard, Dodge & Dittus, 2002, Guilamo-Ramos et al., 2008). Theory-based communication topics were asked only of the parents. The question stem and items were: How many times have you spoken with [child's name] about:

1. What to expect from sexual relationships.
2. The advantages and disadvantages of waiting until [she/he] is older to engage in sex.
3. How common sexual behavior is among people [her/his] own age.
4. Whether or not [name] thinks of [herself/himself] as someone who is ready for a sexual relationship.
5. The kinds of emotions that can accompany having sex.
6. The advantages and disadvantages of having sex
7. The kinds of emotions that can accompany waiting until you are older to have sex.

8. How confident [name] is about following through on the decisions [she/he] has made about sex.
9. Reasons to avoid getting pregnant or impregnating someone else while a teenager.
10. Reasons to avoid getting a sexually transmitted disease.
11. What to do if [she/he] is ever pressured to do something sexually that s/he doesn't want to do.

Parents indicated the number of times they had discussed each item with their children, with values ranging from "0" to "10 or more".

Barriers to communication variables were developed based on the empirical literature. Responses were made on a 10-point scale with anchors at the end points. A "1" was labeled "strongly disagree" and "10" was labeled "strongly agree." The wording for the parent item is listed first, followed by the wording for the teen item in parentheses.

1. [Name] is too young for me to talk about these topics with. (I am too young for my [father/mother] to talk about these topics with me.)
2. I would be embarrassed talking to [name] about these topics. (I would be embarrassed if my [father/mother] talked with me about these topics.)
3. I am concerned that [name] would be embarrassed if I talked to him/her about these topics. (My [father/mother] would be embarrassed talking to me about these topics.)
4. I think it is better if [name] 's other parent talks to him/her about these topics. (My [father/mother] leaves it to my other parent to talk with me about these topics.)
5. I don't have enough information to talk with [name] about these topics. (My [father/mother] doesn't have enough information to talk with me about these topics.)

6. I don't think my friends talk to their children about these topics. (My [father/mother] thinks other parents don't talk to their children my age about these topics.)
7. I think the schools do a good job of telling [name] what s/he needs to know about these topics. (My [father/mother] thinks the schools do a good job of telling me about these topics.)

Outcome measures in the survey were asked of teens about their own sexual behavior. The items were adapted from the National Longitudinal Study of Adolescent to Adult Health (Add Health) survey (Bearman, Jones & Udry, 1997). Items 1-4 were included without modification and items 5-6 were slightly modified to fit a three-month recall and response options were slightly re-worded. The items were:

1. Have you ever engaged in any sexual behavior (touching without clothes on or oral, vaginal or anal sex) with another person?

2. Have you ever had oral sex (penis or vagina in mouth)?

3. Have you ever had vaginal sex (penis in vagina)?

4. In the past 3 months, have you had vaginal sex?

5. In the past 3 months, how often have you or your partner used condoms when you've had vaginal sex?

6. In the past 3 months, how often have you or your partner used a birth control method other than condoms when you've had vaginal sex (e.g. the pill, ring, IUD, etc.)?

Response categories for items 1-4 were yes or no. For items 5 and 6, response options were based on a 5-point scale: "every time," "more than half the time," "about half the time," "less than half the time," and "never." Skip patterns were utilized so that only respondents that

indicated "yes" on ever engaging in any sexual behavior were asked specifically about oral and vaginal sex and so that only those that indicated sex in the past 3 months were asked about condom and birth control use in the past three months.

The covariates of interest are based on previous empirical work on adolescent sexual behavior and include age of teen, gender of teen, race/ethnicity, household income, parental marital status, parental educational attainment, and parent's current employment status. Gender and age of teen were both verified on the survey. Other covariates were collected by Gfk when adults enrolled to be part of their panel and were re-verified annually. Race/ethnicity was provided for parents in the sample and teens were assumed to be the same race/ethnicity of their parents for purposes of these analyses. Although there are some cases where this may not be true, given the sample size, these cases of race/ethnicity difference between parents and their children should not be widespread enough to cause shifts in the conclusions.

Results

Analytic Plan

Quantitative analyses were conducted using SPSS 22. Descriptive statistics were examined for all of the items utilized in the analyses for both the parent and teen samples, and the data was examined to assess non-normality and the presence of outliers that could distort fundamental trends in the data. The presence of outliers was minimal and the size of the data set ensured that these outliers would not shift fundamental trends in the data. One way analysis of variance (ANOVA) tests were utilized to analyze the presence of differences between racial and ethnic groups for both parents and teens and t-tests between fathers and mothers and teen girls and boys for all items and for previously developed communication scales. Potential interactions between race/ethnicity and the parent and teens scales as well as gender interactions

with the scales were examined in relationship to the sexual activity outcome measures. Logistic and multiple regressions were conducted to examine whether individual barrier items were associated with communication frequency. In addition, logistic and multiple regression was utilized to explore the relationships between communication the sexuality topics scales and the theory-based topics scale and behavioral outcomes: whether or not adolescents had engaged in any sexual behavior, whether or not adolescents had engaged in oral sex, whether or not adolescents had engaged in vaginal sex, how consistently adolescents had used condoms during sexual activity in the past 3 months, and how consistently adolescents had used birth control methods other than condoms in the past 3 months. Both weighted and unweighted versions of the models were analyzed. As previously noted, an analysis of the sample with and without the weights found that the weights didn't fully correct for differences between the sample and the general population on key demographic measures such as educational attainment and marital status. Because the weights failed to correct for differences between the sample and demographics of each racial/ethnic group in the general population, the unweighted results are reported here. An alpha level of .05 was used to evaluate statistical significance.

Frequency of Communication

Topic Communication as Reported by Parents and Teens

The mean adolescent age at which parents report they began talking to their children about topics related to sexuality was 12.08 years old. The mean age at which adolescents report that conversations with their parents began was 13.28 years old. A paired t-test confirmed that this difference in reports is statistically significant ($p < .001$).

Both parents and teens report that the most frequently discussed topic related to sexuality was "how to deal with peer pressure" which parents report is discussed an average of

6.34 times and teens report was discussed an average of 5.38 times. For both parents and teens, the next most frequently discussed topic was "how to stay safe during online activities such as social networking (such as Facebook)" with parents reporting that topic was discussed 5.86 times on average and teens reporting the topic was discussed 5.38 times. The third most frequently discussed topic was "puberty and changes that occur physically, socially and emotionally during the teen years" which parents reported was discussed 5.12 times and teens reported was discussed 4.64 times. In each case, the difference between parent and teen reports was statistically significant. See Table 1 for means and standard deviations for all items related to sexuality topic communication for both parents and teens.

The least frequently discussed topics as reported by parents were "where to get reproductive healthcare services", "where to get reliable information about sexual health," and "birth control methods." For teens, the same topics were reported as being least frequently discussed: "where to get reproductive healthcare services," "where to get reliable information about sexual health" and "birth control." (See Table 1.) There were significant differences between parent and teen reports on the topics of "where to get reproductive healthcare services" but there were not significant differences in reports on the number of discussions about "where to get reliable information about sexual health" or "birth control" between parents and teens. (See Table 1.)

For most of the topics, close to 20% of teens report that their parents had never discussed the topic at all and close to 20% report that their parents have spoken to them more than ten times, with the balance reporting one or two conversations. The topic that the largest percentage of teens reported had never been discussed by parents was "where to get reproductive healthcare services," which 49% reported their parents had not ever spoken to

them about. Other topics that significant percentages of parents and teens had not discussed were, "birth control methods" (39% of teens report zero conversations), "where to get reliable sexual health information" (38.7% of teens report zero conversations) and "how to prevent sexually transmitted diseases" (32.7% of teens report zero conversations). The topics that the largest percentages report having had 10 or more conversations are "how to handle peer pressure," (28.2% of teens report 10 or more conversations) "how to stay safe online," (28.4% of teens report 10 or more conversations) and "puberty" (22.3% of teens report 10 or more conversations). (See Table 1.)

To examine whether the lack of conversation was mainly a function of the age of the teens in the sample, I examined the percentage of teens ages 14 and younger compared to teens ages 15 and up that reported zero conversations about each topic as well as the percentage who reported 10 or more conversations about each topic. See Tables 2 and 3. As teens get older, they are much less likely to report zero conversations about each topic and are much more likely to report having had 10 or more conversations with their parents about each topic. Given the wide age range of the sample in this study (ages 9-21), there are many topics that are not salient until older ages. However, there are still particular topics about which the older teens in this sample report having had no conversations with their parents. For example, 17.5% of teens ages 15 and up reported that their parents had never talked to them about "reproduction and how babies are made," 20.2% reported that they had never discussed "similarities between boys and girls/men and women" with their mother or father, and 36.6% had never discussed "where to get reproductive healthcare services." (See Table 2.) For each sexuality topic, more than 10% of teens report that they have had no conversations about the topic with their parents. (See Table 2.)

Topics by Race and Ethnicity

One-way ANOVAs were utilized to examine around what age communication about sexuality between parents and children began and the frequency of communication for African American, Latino and White parents and teens. When analyzing parent reports, there were no significant differences by race and ethnicity for the age at which conversations began. However, teen reports of when conversations about sexuality began did vary by race/ethnicity with significant differences reported between White and Black teens. Black teens report first talking about any topics related to sexuality at an average of 12.93 years old, Hispanic teens report conversations beginning on average at 13.18 years old, and White teens report conversations beginning at age 13.66 years old. There was no significant difference in reports between Hispanic teens and Black teens.

Statistically significant differences in the frequency of conversations about each sexuality topic exist among African American, Hispanic and White parents and teens. Results are reported in Table 4. On every sexuality topic, on average, African American teens were significantly more likely to report discussing it with their parents than White teens were. (See Table 4.) In addition, on average, Hispanic teens were significantly more likely to discuss ten of the thirteen sexuality topics with their parents than White teens. (See Table 4.) In other words, on average, White teens were significantly less likely than African American or Hispanic teens to report discussions with their parents about the thirteen topics related to sexuality. Examination of the aggregated communication scale showed that African American teens tended to speak to their parents more than White teens, and Hispanic teens tended to speak more to their parents more than White teens. African Americans teens also report more

conversations than Latino teens with their parents about several topics including reproduction/how babies are made, healthy and unhealthy romantic relationships, specific strategies for saying no and where to get reliable sexual health information and reproductive health services. (See Table 4.)

Examining parent reports, on average African American parents reported larger numbers of conversations about every sexuality topic than White parents. (See Table 5.) Hispanic parents, on average, also reported greater numbers of conversations about every sexuality topic than White parents. (See Table 5.) Similarly, on average, White parents reported significantly fewer conversations about sexuality topics than either African American or Hispanic parents. A comparison of the mean number of conversations between African American and Hispanic parents showed that for the topics of "how to deal with peer pressure", "how to prevent sexually transmitted diseases including HIV" and "sexual orientation," African American parents had spoken to their children more than Hispanic parents (See Table 5). Examination of the aggregated communication scale showed that African American parents spoke to their children more than both White and Hispanic parents. (See Table 5.)

While frequency of conversation differed by race/ethnicity, the most and least discussed topics were consistent among groups. For African American, Latino and White parents and teens, the most discussed topics were "how to deal with peer pressure," "how to stay safe during online activities such as social networking," and "puberty and changes that occur physically, socially and emotionally during the teen years." The least discussed topics were, "where to get reproductive healthcare services," "where to get reliable information about sexual health," and "birth control methods." See Tables 4 and 5.

Thus, hypotheses 1a which posited similar frequency among racial/ethnic groups was not supported. Hypothesis 1b which posited similar topics of discussion among racial/ethnic groups was supported.

Topics by Gender

On average, mothers were significantly more likely to have talked with their child about each sexuality topic than fathers. (See Table 6.) Among teens, girls report more conversations on average about every sexuality topic than boys except for the topics of "birth control methods" and "preventing sexually transmitted diseases including HIV" on which there is no difference in reports between girls and boys. (See Table 6.) Examining the aggregated communication scale by gender shows that there is a significant difference in the topic communication scale score between both mothers and fathers and daughters and sons. Mothers report more conversations than fathers and daughters report more conversations than sons.

For mothers and fathers, daughters and sons, the most frequently discussed topics were "how to deal with peer pressure," "how to stay safe during online activities such as social networking," and "puberty and changes that occur physically, socially and emotionally during the teen years." The least discussed topics were "where to get reproductive health services," "where to get reliable information about sexual health," and "birth control methods." It is worth noting that for sons, the topic of "similarities and differences between boys and girls/men and women" was reported as frequently as discussions about puberty by teen males.

Thus, hypotheses 1c which posits differences in the frequency of conversations about sexuality is supported. Hypothesis 1d, which anticipated differences in the topics discussed, was not supported.

Theory-Based Topics

The frequency of discussion about theory-based topics was collected only from the parents in the sample. Table 7 includes means and standard deviations for all theory-based topics. The most frequently discussed topics were "reasons to avoid getting pregnant or impregnating someone else while a teenager, "reasons to avoid getting a sexually transmitted disease," and "what to do if (she/he) is ever pressured to do something sexually that s/he doesn't want to do." The least discussed theory- based topics were, "whether or not [child's name] thinks of [herself/himself] as someone who is ready for a sexual relationship," "what to expect from sexual relationships," and "the kinds of emotions that can accompany having sex." The scale developed with the theory-based topics has a mean of 4.21. (See Table 7 and Kantor, Paper 1.)

Theory-Based Topics by Race/Ethnicity

One-way analysis of variance (ANOVA) tests, including all covariates, showed that African American parents discussed every theory-based topic with their children statistically significantly more than White parents (See Table 8). Hispanic parents also discussed every theory-based topic with their children statistically significantly more than White parents discussed each of the topics. (See Table 8.) Similarly, White parents report significantly fewer conversations about theory-based topics than either Hispanic or African American parents. A comparison of reports by African American parents and Hispanic parents about theory-based topics showed that on all topics except two, African Americans discussed the topics more than Hispanic parents. The two topics on which there was not a difference between African American and Hispanic parents were "what to expect from sexual relationships," and "how confident [name] is in following through on the decisions [s/he] has made about sex." (See

Table 8.) The theory-based scale showed statistically significant differences between African American and White parents and between Hispanic and White parents such that both African American and Hispanics report higher frequency of discussion about theory-based topics with their children. (See Table 8.) There was no statistically significant difference in the theory scale mean between Hispanic and African American parents. These results further disprove Hypotheses 1a which posited that there would not be differences by race and ethnicity on frequency of discussions as there are a number of significant differences. However, the topics discussed do not vary by race/ethnicity with the most frequently discussed topic for all groups being "reasons to avoid getting pregnant or impregnating someone else while a teenager," and the second most discussed topic being "the importance of never pressuring anyone to do something they don't want to do sexually" (for African Americans and Whites) and "reasons to avoid sexually transmitted diseases including HIV" (for Hispanics). The least discussed topics for all three groups were "what to expect from sexual relationships," and "whether or not [name] thinks of [herself/himself] as someone who is ready for a sexual relationship." These findings further support hypothesis 1b which posits that the topics of conversation will be similar across racial/ethnic groups.

Theory-Based Topics by Gender

On average, mothers report discussing every theory-based topic with their children more than fathers do. However, the topics that are discussed are similar, with the most frequently discussed topics by fathers and mothers being "reasons to avoid pregnancy" and "reasons to avoid STDs." (See Table 9.) On the aggregated theory scale, there is a statistically significant difference between mothers and fathers with mothers reporting a higher overall mean than fathers (See Table 9).

Barriers

The barrier items were presented to respondents on a 10-point scale, with 1 designated "strongly disagree," and 10 designated "strongly agree." There was no barrier item that had a mean value above 5. Table 10 includes the means and standard deviations for all barriers items for parents and teens. Of the potential barriers, the highest mean score for parents was on an item that stated that that they had already talked with their child enough about these topics. This item was included only on the parent survey. Among teens, the top reason they reported that they had not communicated more about sexuality with their parents was that "my [father/mother] thinks the schools do a good job of telling me what I need to know about these topics." (See Table 10.) The schools doing a good job was the second most common reason reported by parents for lack of additional conversations about sexuality topics. For parents and teens, the next most frequently cited reason was that the child was too young for them to talk to about these topics. The reason that parents and teens disagreed on most strongly as a reason for not having more conversations was parents not having enough information about sexuality to talk about the topics. (See Table 10.) There were significant differences between parent and teen reports on 4 out of the 7 barriers and no difference in reports on 3. For the reports with statistically significant differences, teens reported higher levels of agreement that the barriers were impediments to conversations about sexuality. (See Table 10.)

Creating a scale using the barriers items was explored but the individual items showed a substantial percentage of unique variance and thus are utilized in this study as individual items. (See Kantor, Paper 1.)

Barriers by Race/Ethnicity

African American parents tended to disagree more strongly that the barrier items were reasons they had not talked more with their children about sexuality topics than either White or

Hispanic parents. (See Table 11.) The items African American parents were statistically significantly more likely to disagree with than White parents were that they would be embarrassed talking to their children about the sexuality topics, that they were concerned about their child's embarrassment talking about sexuality topics, the idea that the other parent was better suited to having the conversation with their child and the idea that the schools were doing a good job. On every barrier item, Hispanic parents were more likely than African Americans to agree that the barrier created obstacles to more conversations with their children about sexuality. Hispanic parents were also more likely than White parents to agree that the barrier items were reasons they had not talked to their children more about sex, with the exception of concern about the child's embarrassment and that the other parent should talk about the issues on which Hispanic and White parents did not differ. (See Table 11.)

Among teens, Hispanic teens were statistically more likely than White teens to report that being too young, their parent not having enough information to talk to them, thinking that other parents don't talk to their children about these topics, and the schools doing a good job were reasons that they and their parent had not talked more about sexuality topics (See Table 12). On one topic: "I would be embarrassed if my [father/mother] talked to me about these topics," White teens were significantly more likely than Hispanic teens to report it was a reason that they and their parent had not talked more. Hispanic teens were more likely to report every barrier item as a reason they had not talked more with their parents than African American teens. African American teens were also statistically more likely to disagree than White teens with the idea that they had not talked more about sexuality topics because their mother or father would be embarrassed talking to them about these topics, because they would be embarrassed

about these topics or because their father or mother leaves it to the other parent to talk about these topics (See Table 12).

Barriers by Gender

Fathers, on average, agreed more strongly that most of the barrier items were reasons they had not communicated more with their child about sexuality. (See Table 13.) Fathers and mothers were equally likely to agree that their child being too young or that lack of information were barriers to communication. (See Table 13.)

Teen girls and boys were equally likely to agree that all of the barrier items were reasons that they had not talked more with their parent about sex. The only statistically significant difference was on the item: "My [mother/father] leaves it to the other parent to talk about these topics with me," which girls were more likely to agree with than boys. (See Table 13.)

Barriers and Communication

A set of regression analyses were conducted to ascertain whether there was an association between reported barriers and the frequency of communication between parents and teens. Using teen reports of barriers, communication frequency was regressed onto each barrier separately for each of the available scales—teen reported topic communication scale, parent reported topic communication scale and theory-based communication scale. Covariates utilized in the analyses were teen age, teen gender, race/ethnicity, parental educational attainment, parental marital status, parent's employment status, and household income. Every barrier item had a statistically significant effect on communication, decreasing the frequency of communication. (See Table 14.) For each unit increase in agreeing a barrier affected parent-teen communication about sexuality, communication, as measured by the topic scale, was reduced between .096 and .319 times. Given a mean scale score of 4.07, a .319 move on the scale due to

identifying as little as one barrier to communication represents an important decline in the number of conversations between parents and adolescents. Thus, hypothesis 2 which posited that barriers would be associated with a reduction in communication frequency is supported.

Communication and Adolescent Sexual Behavior

The sexual behavior outcomes measured in the questionnaire were whether or not teens had ever engaged in any sexual behavior, whether or not teens had ever engaged in vaginal sex, whether or not teens had ever engaged in oral sex, the consistency of condom use in the past three months, and the consistency of birth control use (other than condoms) in the last three months.

In the overall sample of 1,663 youth ages 9-21, 75.6% reported they had never engaged in any sexual behavior (N = 1,257) and 22.7% reported that they had (N = 377), 174 females and 203 males. Among White teens, 180 of 700 reported that had engaged in sexual behavior (25.7%), among African American teens, 72 of 294 reported that they had engaged in sexual behavior (24.5%) and among Hispanic teens, 125 of 640 reported that they had engaged in sexual behavior (19.53%). There is no significant difference by gender in base rates of ever having engaged in any sexual behavior. The only significant mean difference in base rates for ever having engaged in any sexual behavior by race/ethnicity were between Whites and Hispanics, where Whites had an increased likelihood of reporting any sexual behavior (.062, $p < .05$).

For whether or not teens had ever had vaginal sex, 82.9% reported no (N = 1,379) and 16.7% reported yes (N = 277). For vaginal sex, among White teens, 19.32% reported ever having had vaginal sex, among African American teens, 18.46% reported ever having had vaginal sex, and among Hispanic teens, 13.1% reported ever having had vaginal sex. Thus, the

Hispanic teens in this sample are less likely to have engaged in sexual behavior than White or African American teens. No significant difference was found by teen gender for rates of vaginal sex.

Oral sex was reported by 226 teens (13.6%) in the sample. White teens were more likely to have engaged in oral sex than African American and Hispanic teens and Hispanic ethnicity was associated with lower likelihood of engaging in oral sex than African American and White teens.

Only youth that reported ever having vaginal sex were asked about consistency of condom use or birth control use other than condoms in the past three months. One hundred eighty subjects reported on consistency of condom use and 176 subjects reported on birth control use other than condoms. Males reported more consistent condom use than females. Hispanic teens were more likely to report consistent condom use than White teens. There were no other significant differences by race and ethnicity. For consistent birth control use, there was no significant difference between males and females in reports of birth control frequency in the past 3 months. Hispanic teens were more likely to report consistent birth control use than White teens. There were no other significant differences by race and ethnicity.

Multivariate Models

Logistic and linear regressions were conducted to examine the relationship between the communication scales and each of the sexual behavioral outcomes: ever engaging in any sexual behavior, ever having vaginal sex, ever having oral sex, frequency of condom use in the past three months, and frequency of birth control use (other than condoms) in the past three months. Covariates that are established in the extant literature as having associations with sexual behavior outcomes for adolescents including teen age, teen gender, parent's educational

attainment (some college versus no college), parent's marital status (married versus unmarried), parent's current employment status (employed versus unemployed), household income and race/ethnicity (White, Black or Hispanic) were utilized in the models.

Model 1: Any Sexual Behavior

For the first model, a multivariate analysis including the teen communication scale and all covariates was fit in a logistic regression model for the dependent variable ever having engaged in any sexual behavior. In the multivariate model, the teen communication scale did not significantly change the odds of teens having ever engaged in any sexual behavior. (See Table 15.)

Two subsequent multivariate models were analyzed to examine the parent scales in the model. In these multivariate models, neither the parent topic communication scale nor the theory-based scale significantly changed the odds of teens having engaged in any sexual behavior. (Not shown.)

The covariates that significantly changed the odds that teens had engaged in sexual behavior in all versions of Model 1 were teen age and parental marital status. (See Table 15.) For each one-year increase in age, the odds that teens had engaged in any sexual behavior increased, odds ratio 1.576. Teens whose parents were married compared to those whose parents were unmarried had lower odds of ever having engaged in any sexual behavior, odds ratio .468. (See Table 15.)

Thus, Hypothesis 3a which posited that parent-teen communication would be associated with higher levels of any sexual behavior was not supported.

Model 2: Vaginal Intercourse

For ever having had vaginal intercourse, the multivariate models for the teen and parent communication scales and the theory-based scales did not significantly change the odds that teens had ever had vaginal sex. (See Table 16.)

Covariates that were significant in Model 2 were teen age and parents' marital status. (See Table 16.) Thus, Hypothesis 3b that parent-teen communication would be associated with a greater likelihood of teens ever having engaged in vaginal sex was not supported.

Model 3: Oral Sex

In the multivariate model with oral sex as the dependent variable, the teen communication scale did not significantly change the odds that teens had ever engaged in oral sex. (See Table 17.) In the subsequent models using the parent scales, neither the parent topic communication scale nor the theory-based communication scale significantly changed the odds that teens have engaged in oral sex.

The significant covariates in Model 3 were household income, parental marital status, and teen age. As household income increases, for every $5,000 increase in income, the odds of teens having ever engaged in oral sex increases, odds ratio, 1.094. Older age among teens increases the odds of ever having engaged in oral sex and having married parents lowers the odds that teens have ever engaged in oral sex. (See Table 17.)

Thus, Hypothesis 3c that parent-teen communication would be associated with higher levels of ever having engaged in oral sex was not supported.

Model 4: Consistency of Condom Use

The multivariate model with consistent condom use as the dependent variable shows no significant association between the teen communication scale and consistency of condom use in

the past 3 months. The parent topic communication scales and the theory-based scales are also not significantly associated with consistency of condom use. (See Table 18.)

Thus, Hypothesis 3d that posited that parent-teen communication about sexuality would be associated with greater consistency of condom use was not supported.

Model 5: Consistency of Birth Control Use

The multivariate model with consistent birth control use as the dependent variable showed no significant association between the teen communication scale, the parent communication scale or the theory-based scale and consistency of birth control use (See Table 19.)

Thus, Hypothesis 3e that posited that parent-teen communication would be associated with greater consistency of birth control use was not supported.

Interaction Analysis

Following the initial multivariate model runs, I investigated whether gender or race/ethnicity moderated the relationship among the key model variables. Interactions with teen gender were not found for the parent or teen topic communication scales or for the theory-based scale, so final models for all five outcomes do not include interaction terms for gender.

There were no interactions between the parent topic communication scale and race/ethnicity for any of the five sexual behavior outcomes. There were no interactions between the teen communication scale and race/ethnicity for vaginal sex, consistency of condom use, or consistency of birth control use when those items were the dependent variable. However, there were interactions with race/ethnicity and the teen communication scale when looking at ever having engaged in any sexual behavior and ever having engaged in oral sex. When ever engaged in any sexual behavior was the dependent variable, the significant product term

coefficient between Blacks and Whites was .871 ($p < .05$). For each unit increase on the teen communication scale, the odds of Black teens having ever engaged in any sexual behavior decreased, odds ratio .935 (ns). Similarly, for every unit increase on the teen communication scale, the odds of White teens having engaged in any sexual behavior was increased, odds ratio 1.073 ($p < .05$). See Table 21 for the model including product terms. Thus, given that the odds ratio for African American teens is not significant, we conclude that there is only a significant change in the odds of ever having engaged in sexual behavior based on communication with parents about sex for White teens such that for every unit increase on the teen communication scale, White teens have increased odds of engaging in any sexual behavior, odds ratio 1.073. See Table 20 for the model with product terms.

When oral sex was the dependent variable, there was an interaction for Hispanic and White teens (.902, $p < .05$) For every unit increase on the teen communication scale White teens had increased odds of oral sex, odds ratio 1.077 ($p < .05$). For Hispanic teens, for every unit increase on the teen communication scale, the odds that they have ever engaged in oral sex declines, odds ratio .971(ns). Given that this result is no longer significant for Hispanic teens once the interaction term is run in the model, this model shows that for White teens, communication is associated with increased odds of having ever engaged in oral sex. See Table 21 for the model with product terms.

There were no interactions with most of the behaviors for the theory-based scale, with one exception. The theory-based scale interacts with race/ethnicity on the dependent variable ever vaginal sex between Hispanic and White teens (.909, $p < .05$). For every unit increase on the theory-based scale, Hispanic teens' likelihood of having ever engaged in vaginal intercourse decreases, odds ratio .980 (ns). For every one unit increase on the theory-based communication

scale, the odds that White teens have engaged in vaginal sex increases, odds ratio 1.078 ($p < .05$). See Table 21. Thus, for White teens, increases in theory based communication between parents and teens increase the odds that teens have ever engaged in vaginal sex. See Table 22 for the model with product terms.

Discussion

As teens get older, more conversations about sexuality take place between parents and teens. However, there are a number of topics on which even older teens report they have never spoken to their parents. More than one-third of teens ages 15-21 report never having spoken with their parents about where to get reproductive healthcare services, 28.4% have never spoken about where to get reliable information about sexual health and 26.9% have never talked about specific strategies for saying no to sexual activity. Recent research suggests that young people report five times as many conversations with peers about sex in the last six months as they do with parents or guardians (Ragsdale, Bersamen, Schwartz, Zamboanga, Kerrick & Grube, 2014). Numerous studies suggest that adolescents receive messages daily from media about sexuality (Rideout, Foehr, & Roberts, 2011). Most parents and youth serving professionals would prefer that parents play a greater role in young people's sexual socialization. If that is to happen, parents must address a greater range of sexuality topics and converse about those topics more frequently with their teens.

There are discrepancies between parents and teens in the number of times they report talking about some topics, although there are topics on which the number of reported conversations is similar. In particular, the number of conversations about birth control methods, sexually transmitted diseases and where to get sexual health information are reported similarly between parents and teens suggesting that either these conversations are more distinct in parent

and teens' memories or that these conversations happened more recently so are more accurately recalled. In addition, these particular topics have not been discussed at all by a significant percentage of teens and parents. In the full sample, 39% of teens report never having talked with birth control methods with their father/mother, 32.8% have never discussed how to prevent STDs including HIV, and 38.8% have never discussed "where to get reliable information about sexual health." Among teens 15 and older, 22.6% report having never discussed birth control methods, 17% have never discussed how to prevent STDs including HIV, and 28.4% have never discussed where to get reliable information about sexual health. (See Table 2.)

Daughters report more conversations about most topics related to sexuality than do sons, a discrepancy that parents ought to be aware of and be encouraged to address. However, on the topic of birth control, which one might expect would be discussed more with girls given that they are the ones that can get pregnant, boys and girls reported equally few conversations. On balance, the lack of conversation about birth control, where to find sexual health information and where to go for sexual and reproductive health services suggests an opportunity for parents to communicate more on topics that will allow their children to get the resources and support they need to ensure their sexual and reproductive health. Mothers report more conversations than fathers on most topics, which is another opportunity to increase family communication about sexuality. Other research shows that fathers make a unique contribution to adolescents' sexual health and thus should be encouraged to increase their role in educating their children about these topics (Guilamo-Ramos et al., 2012).

There are important differences in the frequency of communication by race/ethnicity and gender. For sexuality topics, both African American parents and teens were significantly more likely than White parents and teens to report more frequent conversations about all of the topics.

Hispanic parents and teens also reported more conversations on most topics than White parents and teens. While it is not possible to know why all of these discrepancies in the number of conversations exist from this data, there are some conclusions that can be drawn from this data. Levels of parental embarrassment by parents themselves or worry about their children's potential embarrassment is significantly lower among African Americans than among White or Hispanic parents and teens. This suggests the potential that a different cultural relationship to issues related to sexuality exists which deserves additional exploration. Other possible reasons for these findings include the possibility that these topics are more salient for families of color. Higher levels of stigma around the topic of sexuality in White families or lower levels of stigma among African American and Latino families is another possible explanation and one which merits additional investigation. What is clear from this data is that African American and Hispanic parents are doing more to communicate about key sexuality topics with their teenage children than White parents.

Higher agreement with barriers to communication about sexuality was associated with a statistically significant decrease in the frequency of conversations about sexuality. African Americans disagreed more strongly with the reasons that have been previously found in the literature to limit family conversations about sexuality than White or Hispanic parents and teens. Hispanics were more likely to agree that some of the barriers were reasons for lack of conversation about sexuality than African Americans or White parents and teens. It is particularly noteworthy that, on average, neither parents nor teens thought that parents not having enough information about sexuality was a barrier to communication. This is an important finding as most available interventions for parents and families related to sexuality emphasize providing parents with information about sexuality topics as a mechanism for

improving parent-child communication about sexuality (Akers, Holland & Bost, 2011, Sutton, Lasswell, Lanier, Willis & Miller, 2014).

Racial and ethnic differences in communication about sexuality have not been examined enough by research, most likely because of a dearth of samples with sufficient numbers of parents and teens from different racial and ethnic backgrounds to allow for direct comparisons. This study suggests there is further work to be done in understanding the more positive dynamics related to discussions about sexuality in African American and Hispanic families and whether there are lessons learned from African American and Hispanic parents that could be shared with White parents in order to increase communication in White families about topics related to sexuality.

This study found that parent-child communication about sexuality topics is not generally associated with sexual behaviors among teens. However, race/ethnicity moderates the outcomes in a few cases and for those models communication was associated with higher levels of sexual activity. Those findings were significant only for White teens and found that communication was associated with greater odds of having engaged in any sexual behavior and having engaged in oral sex. These findings suggest that in White families, increased conversation may follow adolescent onset of sexual activity although this data does not allow us to dismiss the possibility that communication could lead to more sexual behavior in some cases. However, these interactions with race/ethnicity exist only on a few of the behaviors and for only some racial/ethnic comparisons, so this study shows that overall communication operates similarly among racial and ethnic group. However, there are notable exceptions that suggest that some dynamics between communication and teen sexual behavior might vary among diverse families and merit further investigation.

There were no significant interactions by adolescent gender suggesting that communication does operate similarly for teen males and females.

It is important to note that this study was limited in the dimensions of communication that were measured, focusing on topics, frequency, and perceived barriers. Other dimensions of communication, including the perceived expertise of the parents, the warmth of the parent-child relationship, parental connectedness and the delivery style of the parents also have bearing on whether communication is likely to be effective but were not measured in the present survey (Wight, 2013, Kincaid, Jones, Sterrett & McKee, 2012, Rodgers & McGuire, 2012, Parkes, Henderson, Wight & Nixon, 2011). Further, the actual content of the many of the conversations is not captured by the measures so it is difficult to know what messages were actually being conveyed or received.

There are several possible implications of these findings. First, parent communication may not influence adolescent sexual behavior. However, given the low frequency of communication reported by both parents and teens, it is also possible that parent communication could influence teen sexual behavior but only if it was more frequent. There are many studies that do demonstrate the association between parental communication and adolescent sexual behavior, particularly delay of sexual initiation (Grossman, Charmaraman, Cedar & Erkut, 2014, Guilamo-Ramos et al., 2012, Hutchinson et al., 2003, Markham, et al., 2010, Sutton et al., 2013). Another perspective is that the purpose and potential positive influence of parental communication about sexuality is not solely about changing sexual behavior. Indeed, most of the measures in this survey may measure a general tendency to communicate about sexuality topics rather than an effort by parents to influence specific risk and protective behaviors. This is particularly clear in the low frequency of discussions about some items such as “specific

strategies for saying no to sexual activity." Further, adolescents worldwide normally initiate sexual behavior in their later teen years (Teitler, 2002) so the more critical and important role of parents may be to help their children learn values and approaches to relationships and sexual decision making for which there are not currently good outcome measures. Development of new outcome variables that explore issues such as young people's confidence in negotiating sexual situations, finding healthcare when needed or talking to partners are areas that merit further investigation in their own right and may be areas which parents can influence through communication. Finally, it is important to note that there are many other influences on young people's initiation of sexual activity, the types of behaviors in which they engage and the likelihood that they will use condoms or birth control consistently. Peers, partners and the media certainly play important roles in influencing behavior and regardless of how much parents communicate or how well they do so, those influences may simply outweigh parental influence.

Limitations

There are several limitations to the current study. First, these are cross-sectional data, which do not allow for the opportunity to determine the temporal relationship between communication and sexual behavior. Age of onset of sexual activities was not included as a variable in this dataset. The sample of teens is less sexually active than comparably aged teens as measured by the National Survey of Family Growth and the Youth Risk Behavior Survey. The survey was also vulnerable to recall bias. Recalling the precise number of conversations that one has had on any topic is challenging. However, the large sample size and the fact that the study allows for direct comparisons of African American, Hispanic and White families makes this study and its analyses an important contribution to the literature given that most studies do not have the

opportunity for direct comparisons of diverse families. The opportunity to examine reports by both parents and teens and by mothers and fathers, daughters and sons also provides new insights about the frequency and content of parent-teen discussions about sexuality as well as barriers to conversations.

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Tables

Table 1: Means and Standard Deviations for Frequency of Discussion of Sexuality Topics, Teen and Parent Reports

Topic	Teen mean	Teen SD	Parent mean	Parent SD
1. Reproduction and how babies are made	3.95	4.113	3.95	3.974
2. Puberty and changes that occur physically, socially and emotionally during the teen years	4.64*	4.194	5.12*	4.146
3. Healthy and unhealthy romantic relationships	4.13*	4.242	4.63*	4.304
4. How to deal with peer pressure	5.38*	4.325	6.34*	4.205
5. Similarities and differences between boys and girls/men and women	4.44*	4.197	4.74*	4.108
6. Specific strategies for saying no to sexual activity	3.62*	4.257	3.94*	4.293
7. The importance of never pressuring anyone into doing something sexually that they don't want to do	4.30*	4.373	4.48*	4.368
8. Birth control methods	3.33	4.118	3.26	4.035
9. How to prevent sexually transmitted diseases, including HIV	3.98	4.371	4.11	4.380
10. Where to get reliable information about sexual health	3.12	3.936	3.21	3.905
11. Where to get reproductive healthcare services	2.61*	3.813	2.35*	3.580
12. Sexual orientation (e.g. information about being straight,	4.08*	4.163	4.29*	4.183

gay, lesbian, or bisexual)				
13. How to stay safe during online activities such as social networking (such as Facebook)	5.38*	4.415	5.86*	4.332
Total Mean of all Items on Communication Scale	4.07	3.465	4.33	3.32

*= statistically significant difference in parent and teen reports on item or scale, $p < .05$

Table 2: Percent never talked about each topic, full sample, younger and older teens (Teen Reports)

Topic	Percent Never Talked (all ages)	Percent Never Talked (14 and younger)	Percent Never Talked (15 and older)
1: Reproduction and how babies are made	22.2%	27.9%	17.5%
2: Puberty and changes that occur physically, socially and emotionally during the teen years	17.3%	20.5%	14.7%
3: Healthy and unhealthy romantic relationships	27.3%	41.4%	15.8%
4: How to deal with peer pressure	15.0%	18.9%	11.8%
5: Similarities and differences between boys and girls/men and women	19.7%	19.2%	20.2%
6: Specific strategies for saying no to sexual activity	37.7%	50.8%	26.9%
7: The importance of never pressuring anyone into doing something sexually that they don't want to do	28.1%	39.9%	18.5%
8: Birth control methods	39.1%	59.2%	22.6%
9: How to prevent sexually transmitted diseases, including HIV	32.8%	52.1%	17.0%
10: Where to get reliable information about sexual health	38.8%	51.6%	28.4%
11: Where to get reproductive healthcare services	49.2%	64.7%	36.6%
12: Sexual orientation (e.g. information about being straight, gay, lesbian, or bisexual)	24.5%	29.6%	20.3%
13: How to stay safe during online activities such as social networking (such as Facebook)	17.2%	20.1%	14.8%

Table 3: Percent more than 10 times talked about each topic, full sample, younger and older teens (Teen Reports)

Topic	Percent Talked More than 10 Times (all ages)	Percent Talked More than 10 Times (14 and younger)	Percent Talked More than 10 Times (15 and older)
1: Reproduction and how babies are made	18.2%	12.6%	22.8%
2: Puberty and changes that occur physically, socially and emotionally during the teen years	22.3%	19.1%	25.0%
3: Healthy and unhealthy romantic relationships	19.5%	12.3%	25.4%
4: How to deal with peer pressure	28.3%	26.7%	29.6%
5: Similarities and differences between boys and girls/men and women	20.4%	18.8%	21.7%
6: Specific strategies for saying no to sexual activity	17.4%	12.7%	21.2%
7: The importance of never pressuring anyone into doing something sexually that they don't want to do	21.2%	15.2%	29.5%
8: Birth control methods	15.4%	8.3%	21.3%
9: How to prevent sexually transmitted diseases, including HIV	20.7%	12.6%	27.3%
10: Where to get reliable information about sexual health	12.7%	9.1%	15.7%
11: Where to get reproductive healthcare services	10.9%	7.4%	13.8%
12: Sexual orientation (e.g. information about being straight, gay, lesbian, or bisexual)	18.8%	14.2%	22.6%
13: How to stay safe during online activities such as social networking (such as Facebook)	28.5%	27.1%	29.5%

Table 4: Mean Number of Times Sexuality Topics discussed: Teen Reports by Race/Ethnicity

Topic	White	African American	Hispanic
1. Reproduction and how babies are made	3.39 [b, c]	4.84 [a, b]	4.15 [a, c]
2. Puberty and changes that occur physically, socially and emotionally during the teen years	4.60 [b, c]	5.87 [b]	5.34 [c]
3. Healthy and unhealthy romantic relationships	4.09 [b, c]	5.87 [a, b]	5.34 [a, c]
4. How to deal with peer pressure	6.09 [b]	7.36 [a, b]	6.15 [a]
5. Similarities and differences between boys and girls/men and women	4.23 [b, c]	5.55 [a, b]	4.91 [a, c]
6. Specific strategies for saying no to sexual activity	3.09 [b, c]	5.07 [a, b]	4.34 [a, c]
7. The importance of never pressuring anyone into doing something sexually that they don't want to do	3.66 [b, c]	5.28 [b]	5.00 [c]
8. Birth control methods	2.76 [b, c]	4.04 [a, b]	3.46 [a, c]
9. How to prevent sexually transmitted diseases, including HIV	3.48 [b, c]	5.30 [a, b]	4.25 [a, c]

10. Where to get reliable information about sexual health	2.62 [b, c]	4.16 [a, b]	3.42 [a, c]
11. Where to get reproductive healthcare services	1.75 [b, c]	3.28 [a, b]	2.58 [a, c]
12. Sexual orientation (e.g. information about being straight, gay, lesbian, or bisexual)	3.97 [b]	5.37 [a, b]	4.15 [a]
13. How to stay safe during online activities such as social networking (such as Facebook)	5.62 [b]	6.30 [b]	5.91
Communication Scale	3.45 [b c]	4.86 [b]	4.39 [c]

a = statistically significant difference between African Americans and Hispanic teens, $p<.05$, 95% CI
b = statistically significant difference between African Americans and White teens, $p < .05$, 95% CI
c = statistically significant difference between Hispanics and White teens, $p < .05$, 95% CI

Table 5: Mean Number of Times Sexuality Topics discussed: Parent Reports by Race/Ethnicity

Topic	White	African American	Hispanic
1. Please indicate how many times you have discussed Reproduction and how babies are made with [name]	3.39 [b, c]	4.84 [a, b]	4.15 [a, c]
2. Puberty and changes that occur physically, socially and emotionally during the teen years	4.60 [b, c]	5.87 [b]	5.34 [c]
3. Healthy and unhealthy romantic relationships	4.09 [b, c]	5.65 [a, b]	4.74 [a, c]
4. How to deal with peer pressure	6.09 [b]	7.36 [a, b]	6.15 [a]
5. Similarities and differences between boys and girls/men and women	4.23 [b, c]	5.55 [a, b]	4.91 [a, c]
6. Specific strategies for saying no to sexual activity	3.09 [b, c]	5.07 [a, b]	4.34 [a, c]
7. The importance of never pressuring anyone into doing something sexually that they don't want to do	3.66 [b, c]	5.28 [b]	5.00 [c]
8. Birth control methods	2.76 [b, c]	4.04 [a, b]	3.46 [a, c]
9. How to prevent sexually transmitted diseases, including HIV	3.48 [b, c]	5.30 [a, b]	4.25 [a, c]
10. Where to get reliable information about sexual health	2.62 [b, c]	4.16 [a, b]	3.42 [a, c]

11. Where to get reproductive healthcare services	1.75 [b, c]	3.28 [a, b]	2.58 [a, c]
12. Sexual orientation (e.g. information about being straight, gay, lesbian, or bisexual)	3.97 [b]	5.37 [a, b]	4.15 [a]
13. How to stay safe during online activities such as social networking (such as Facebook)	5.62 b	6.30 b	5.91
Communication Scale	3.79 [b, c]	5.24 [a, b]	4.49 [a, c]

a = statistically significant difference between African Americans and Hispanic parents, $p<.05$, 95% CI

b = statistically significant difference between African Americans and White parents, $p < .05$, 95% CI

c = statistically significant difference between Hispanics and White parents, $p < .05$, 95% CI

Table 6: Topic Communication by Gender for Mothers and Fathers, Sons and Daughters

Topic	Mothers	Fathers	Sons	Daughters
1. Reproduction and how babies are made	4.37 [a]	3.18 [a]	3.68 [b]	4.24 [b]
2. Puberty and changes that occur physically, socially and emotionally during the teen years	5.61 [a]	4.22 [a]	4.17 [b]	5.16 [b]
3. Healthy and unhealthy romantic relationships	5.08 [a]	3.78 [a]	3.70 [b]	4.58 [b]
4. How to deal with peer pressure	6.66 [a]	5.75 [a]	5.14 [b]	5.64 [b]
5. Similarities and differences between boys and girls/men and women	5.08 [a]	4.09 [a]	4.17 [b]	4.73 [b]
6. Specific strategies for saying no to sexual activity	4.38 [a]	3.11 [a]	3.18 [b]	4.09 [b]
7. The importance of never pressuring anyone into doing something sexually that they don't want to do	4.98 [a]	3.55 [a]	4.08 [b]	4.53 [b]
8. Birth control methods	3.62 [a]	2.61 [a]	3.23	3.43

9. How to prevent sexually transmitted diseases, including HIV	4.54 [a]	3.31 [a]	3.91	4.06
10. Where to get reliable information about sexual health	3.62 [a]	2.46 [a]	2.86 [b]	3.41 [b]
11. Where to get reproductive healthcare services	2.71 [a]	1.70 [a]	2.36 [b]	2.89 [b]
12. Sexual orientation (e.g. information about being straight, gay, lesbian, or bisexual)	4.67 [a]	3.59 [a]	3.87 [b]	4.30 [b]
13. How to stay safe during online activities such as social networking (such as Facebook)	6.27	5.08	4.87 [b]	5.94 [b]
Communication Scale	4.74 [a]	3.57 [a]	4.38 [b]	3.79 [b]

[a] = statistically significant difference between mothers and fathers, $p < .05$
[b] = statistically significant difference between daughters and sons, $p < .05$

Table 7: Means and Standard Deviations, Theory-Based Communication Items (Parent Reports)

Topic	Mean	SD
What to expect from sexual relationships.	3.56	4.170
The advantages and disadvantages of waiting until [she/he] is older to engage in sex.	4.72	4.413
How common sexual behavior is among people [his/her] own age.	3.82	4.187
Whether or not [name] thinks of [herself/himself]as someone who is ready for a sexual relationship.	3.47	4.181
The kinds of emotions that can accompany having sex.	3.69	4.214
The advantages and disadvantages of having sex.	3.78	4.234
The kinds of emotions that can accompany waiting until you are older to have sex.	4.06	4.361
How confident [name] is about following through on the decisions [she/he] has made about sex.	4.06	4.361
Reasons to avoid getting pregnant or impregnating someone else while a teenager.	5.52	4.568
Reasons to avoid getting a sexually transmitted disease.	4.86	4.566
What to do if [SHE/HE] is ever pressured to do something sexually that s/he doesn't want to do.	4.84	4.388
Theory-based scale	4.21	3.811

Table 8: Theory-Based Topics by Race/Ethnicity (Parent Reports only)

Topic	White	African American	Hispanic
What to expect from sexual relationships.	2.80 [a, b]	4.50 [a]	3.95 [b]
The advantages and disadvantages of waiting until [she/he] is older to engage in sex.	3.94 [a, b]	6.00 [a, c]	4.97 [b, c]
How common sexual behavior is among people [his/her] own age.	3.11 [a, b]	4.85 [a, c]	4.11 [b, c]
Whether or not [name] thinks of [herself/himself]as someone who is ready for a sexual relationship.	2.73 [a, b]	4.60 [a, c]	3.74 [b, c]
The kinds of emotions that can accompany having sex.	2.95 [a, b]	4.72 [a, c]	4.02 [b, c]
The advantages and disadvantages of having sex.	3.00 [a, b]	4.89 [a, c]	4.12 [b, c]
The kinds of emotions that can accompany waiting until you are older to have sex.	2.95 [a, b]	4.72 [a, c]	4.02 [b, c]
How confident [name] is about following through on the decisions [she/he] has made about sex.	3.16 [a, b]	5.07 [a]	4.56 [b]
Reasons to avoid getting pregnant or impregnating someone else while a teenager.	5.01 [a, b]	6.48 [a, c]	5.63 [b, c]

Reasons to avoid getting a sexually transmitted disease.	4.11 [a, b]	6.00 [a, c]	5.16 [b, c]
What to do if [s/he] is ever pressured to do something sexually that s/he doesn't want to do.	4.20 [a, b]	6.03 [a, c]	4.98 [b, c]
Theory-based scale	3.47 [a, b]	5.31 [a]	4.52 [b]

[a] = statistically significant difference between Whites and African Americans ($p < .05$)
[b] = statistically significant difference between Whites and Hispanics ($p < .05$)
[c] = statistically significant difference between African Americans and Hispanics ($p < .05$)

Table 9: Theory-Based Topics: Mothers and Fathers

Topic	Mothers	Fathers
What to expect from sexual relationships.	3.99 [a]	2.75 [a]
The advantages and disadvantages of waiting until [she/he] is older to engage in sex.	5.20 [a]	3.81 [a]
How common sexual behavior is among people [his/her] own age.	4.19 [a]	3.12 [a]
Whether or not [name] thinks of [herself/himself] as someone who is ready for a sexual relationship.	3.93 [a]	2.61 [a]
The kinds of emotions that can accompany having sex.	4.12 [a]	2.88 [a]
The advantages and disadvantages of having sex.	4.25 [a]	2.90 [a]
The kinds of emotions that can accompany waiting until you are older to have sex.	4.54 [a]	3.15 [a]
How confident [name] is about following through on the decisions [s/he] has made about sex.	4.52 [a]	3.19 [a]
Reasons to avoid getting pregnant or impregnating someone else while a teenager.	5.97 [a]	4.68 [a]
Reasons to avoid getting a sexually transmitted disease.	5.33 [a]	4.00 [a]
What to do if [s/he] is ever pressured to do something sexually that [s/he] doesn't want to do.	5.27 [a]	4.03 [a]
Theory-based scale	4.66 [a]	3.37 [a]

a = Significant difference between mothers and fathers $p < .05$

Table 10: Means and Standard Deviations, Parent and Teen Barrier Items

Item	Parent mean	Parent SD	Teen mean	Teen SD
1) [Name] is too young for me to talk about these topics with. (Teen item: I am too young for my [father/mother] to talk about these topics with me.)	3.82	3.327	3.71	3.317
2) I would be embarrassed talking to [name] about these topics. (Teen item: My [father/mother] would be embarrassed talking to me about these topics.)	2.82*	2.582	3.70*	3.192
3) I'm concerned that [name] would be embarrassed if I talked to him/her about these topics." (Teen item: I would be embarrassed if my [father/mother] talked with me about these topics.	3.90*	2.985	4.97*	3.347
4) I think it is better if [name]'s other parent talks to him/her about these topics. (Teen item: My [father/mother] leaves it to my other parent to talk about these topics with me.)	3.23	3.098	3.17	3.045

5) I don't have enough information to talk with [name] about these topics. (Teen item: My [father/mother] doesn't have enough information to talk to me about these topics.)	2.40	2.252	2.51	2.321
6) I don't think my friends talk to their children about these topics. (Teen item: My [father/mother] thinks other parents don't talk to their children my age about these topics.)	3.21*	2.594	3.50*	2.836
7) [Note: Item asked only of parents] I've already talked enough with [name] about these topics.	4.82	3.126	Not asked	Not asked
8) I think the schools do a good job of telling [name] what s/he needs to know about these topics. (Teen item: My [father/mother] thinks the schools do a good job of telling me what I need to know about these topics.)	4.06*	2.850	4.41*	3.025

* = Significant difference between parent and teen reports $p < .05$

Table 11: Barriers to Communication about Sexuality by Race/Ethnicity: Parent Reports

Barrier	White	African American	Hispanic
1) [Name] is too young for me to talk about these topics with.	3.71 [b]	3.39 [c]	4.15 [b, c]
2) I would be embarrassed talking to [name] about these topics	2.79 [a, b]	2.28 [a, c]	3.08 [b, c]
3) I'm concerned that [name] would be embarrassed if I talked to him/her about these topics.	4.03 [a]	3.38 [a, c]	3.99 [c]
4) I think it is better if [name] 's other parent talks to him/her about these topics.	3.28 [a]	2.82 [a, c]	3.36 [c]
5) I don't have enough information to talk with [name] about these topics.	2.07 [b]	2.06 [c]	2.92 [b, c]
6) I don't think my friends talk to their children about these topics.	3.03 [b]	2.99 [c]	3.53 [b, c]
7) I think the schools do a good job of telling [name]what s/he needs to know about these topics.	3.70 [a,b]	3.28 [a,c]	4.80 [b,c]

[a] = statistically significant difference between Whites and African Americans
[b] = statistically significant difference between Whites and Hispanics
[c] = statistically significant difference between African Americans and Hispanics

Table 12: Means for Barriers to Communication by Race/Ethnicity: Teen Reports

Barrier	White	Black	Hispanic
1) I am too young for my [father/mother] to talk about these topics with me	3.53 [b]	3.18 [c]	4.17 [b, c]
2) My [father/mother] would be embarrassed talking to me about these topics.	4.03 [a]	2.91 [a, c]	3.71 [c]
3) I would be embarrassed if my [father/mother] talked to me about these topics.	5.43 [a, b]	4.17 [a, c]	4.84 [b, c]
4) My [father/mother] leaves it to my other parent to talk with me about these topics	3.36 [a]	2.60 [a, c]	3.24 [c]
5) My [father/mother] doesn't have enough information to talk with me about these topics	2.35 [b]	2.20 [c]	2.87 [b, c]
6) My [father/mother] thinks other parents don't talk to their children my age about these topics.)	3.36 [b]	3.28 [c]	3.75 [b, c]
7) My [father/mother] thinks the schools do a good job of telling me about these topics.	4.08 [b]	3.81 [c]	5.05 [b, c]

a = statistically significant difference between Whites and African Americans
b = statistically significant difference between Whites and Hispanics
c = statistically significant difference between African Americans and Hispanics

Table 13: Barriers to Communication about Sexuality Comparing Mothers and Fathers, Daughters and Sons

Barrier	Mothers	Fathers	Daughters	Sons
1) [Name] is too young for me to talk about these topics with. [Teen item=I am too young for my [father/mother] to talk about these topics with me]	3.76	3.94	3.72	3.72
2) I would be embarrassed talking to [name] about these topics.	2.61 [a]	3.20 [a]	3.76	3.64
3) I would be embarrassed if my [father/mother] talked with me about these topics.	3.63 [a]	4.40 [a]	5.04	4.90
4) I think it is better if [name]'s other parent talks to him/her about these topics.	2.67 [a]	4.26 [a]	3.39 [b]	2.94 [b]
5) I don't have enough information to talk with [name] about these topics.	2.33	2.53	2.63	2.41
6) I don't think my friends talk to their children about these topics.	3.06 [a]	3.50 [a]	3.50	3.49
7) I think the schools do a good job of telling [name] what s/he needs to know about these topics.	4.10 [a]	3.97 [a]	4.53	4.29

a = Statistically significant difference between mothers and fathers
b= Statistically significant difference between girls and boys

Table 14: The Relationship Between Barriers and Frequency of Communication (Teen Reports)

Barrier (Teen Reports)	B	SE B	*B*	Sig
I am too young for my [father/mother] to talk about these topics with me. (R^2 =.120)	-.253	.030	-.242	.000
My [father/mother] would be embarrassed talking to me about these topics. (R^2 =.156)	-.301	.025	-.278	.000
I would be embarrassed if my [father/mother] talked with me about these topics. (R^2 =.172)	-.319	.024	-.309	.000
My [father/mother] leaves it to my other parent to talk about these topics with me. (R^2 =.122)	-.235	.026	-.207	.000
My [father/mother] doesn't have enough information to talk with me about these topics. (R^2 =.103)	-.234	.035	-.158	.000
My [father/mother] thinks other parents don't talk to their children my age about these topics.) (R^2 =.086)	-.096	.029	-.079	.001
My [father/mother] thinks the schools do a good job of telling me about these topics. (R^2 =.101)	-.172	.027	-.151	.000

Table 15: Model 1: Teen Communication and Any Sexual Behavior Among Teens Ages 9-21

Model 1: Any Sexual Behavior χ^2 **=487.884**	**B**	**SE B**	**Wald**	**Exp(B)**
Teen communication scale	.030	.020	2.278	1.031
Teen age	.455	.027	275.285	1.576**
Teen gender	.190	.141	1.818	1.209
Parent college (some v none)	-.118	.159	.551	.889
Parent married	-.759	.169	20.233	.468**
Parent employed	.199	.163	1.479	1.220
Household income	.030	.019	2.352	1.030
Black vs. Hispanic (reference)	.110	.207	.282	1.116
White vs. Hispanic (reference)	.314	.166	3.573	1.369
Black vs. White (reference)	--.204	.211	.933	.731

*p <.05

**p <.001

Table 16: Model 2: Teen Communication Scale and Ever Vaginal Sex Among Teens Ages 9-21

Model 2 Ever Vaginal Sex χ^2**=424.310**	**B**	**SE B**	**Wald**	**Exp(B)**
Teen communication scale	.034	.022	2.373	1.034
Teen age	.492	.032	231.957	1.636**
Teen gender	.107	.156	.473	1.113
Parent college (some v none)	-.192	.174	1.206	.826
Parent married	-.608	.187	10.553	.545*
Parent employed	.125	.181	.477	1.133
Household income	.025	.021	1.340	1.025
Black vs. Hispanic (reference)	.299	.229	1.703	1.349
White vs. Hispanic (reference)	.434	.185	5.521	1.544*
Black vs. White (reference)	-.135	.230	.345	.873

*p <.05

**p <.001

Table 17: Model 3: Teen Communication Scale and Ever Oral Sex Among Teens Ages 9-21

Model 3: Ever Oral Sex χ^2**=325.290**	**B**	**SE B**	**Wald**	**Exp(B)**
Teen communication scale	.016	.023	.467	1.016
Teen age	.426	.032	178.577	1.532**
Teen gender	.232	.164	1.998	1.261
Parent college (some v none)	-.093	.185	.255	.911
Parent married	-.850	.199	18.343	.427**
Parent employed	.042	.193	.047	1.043
Household income	.090	.023	14.786	1.094**
Black vs. Hispanic (reference)	.120	.246	.237	1.127
White vs. Hispanic (reference)	.431	.194	4.912	1.539
Black vs. White (reference)	-.311	.244	1.619	.733

*p <.05

**p <.001

Table 18: Model 4: Teen Communication Scale and Consistency of Condom Use in the Past 3 Months Among Teens Ages 9-21

Model 4: Consistency of Condom Use, past 3 months R^2**=.120**	**B**	**SE B**	***B***	**Sig.**
Teen communication scale	.018	.032	.042	.576
Teen age	.013	.055	.017	.820
Teen gender	.783	.224	.261	.001*
Parent college (some v none)	.284	.259	.092	.275
Parent married (v not married)	.374	.254	.119	.142
Parent employed	-.220	.264	-.066	.406
Household income	-.002	.032	-.004	.962
Black vs. Hispanic (reference)	-592	.330	.151	.075
White vs. Hispanic (reference)	.649	.260	.217	.014*
Black vs. White (reference)	-.057	.346	-.015	.870

*p <.05

**p <.001

Table 19: Model 5: Teen Communication Scale and Consistency of Birth Control Use (other than condoms) in the Past 3 Months, Teens Ages 9-21

Model 5: Consistency birth control (other than condom) use, past 3 months **R^2=.065**	**B**	**SE B**	***B***	**Sig.**
Teen communication scale	.031	.040	.062	.432
Teen age	.063	.069	.070	.366
Teen gender	-.136	.280	-.038	.626
Parent college (some v none)	.263	.324	.072	.418
Parent married	-.059	.319	-.016	.854
Parent employed	.104	.329	.026	.753
Household income	-.067	.041	-.159	.105
Black vs. Hispanic (reference)	.453	.414	.096	.276
White vs. Hispanic (reference)	.954	.327	-.266	.004*
Black vs. White (reference)	-.501	.431	-.106	.247

*p <.05

**p <.001

Table 20: Model 1, Teen Communication Scale and Any Sexual Behavior with Product Terms

Model 1: **Any Sexual Behavior** **χ^2=494.197**	**B**	**SE B**	**Wald**	**Exp(B)**
Teen communication scale	.070	.031	5.167	1.073*
Teen age	.459	.028	275.917	1.583**
Teen gender	.190	.141	1.802	1.209
Parent college (some v none)	-.095	.160	.353	.910
Parent married	-.781	.169	21.260	.458**
Parent employed	.200	.164	1.487	1.222
Household income	.029	.019	2.316	1.030
Black vs. White (reference)	.484	.340	2.017	1.622
White vs. Black (reference)	.484	.340	2.017	.617

*p <.05
**p <.001

Table 21: Model 3, Teen Communication Scale and Ever Oral Sex with Product Terms

Model 3: Ever Oral Sex χ^2**= 331.056**	**B**	**SE B**	**Wald**	**Exp(B)**
Teen communication scale	.074	.034	4.878	1.077*
Teen age	.430	.032	179.427	1.537**
Teen gender	.235	.165	2.034	1.265
Parent college (some v none)	-.072	.186	.148	.931
Parent married	-.879	.199	19.450	.415**
Parent employed	.024	.194	.015	1.024
Household income	.088	.023	14.206	1.093**
Hispanic vs. White (reference)	.009	.299	.001	1.009
White vs. Hispanic (reference)	-.009	.299	.001	.991

*p <.05
**p <.001

Table 22: Theory-based Scale and Ever Vaginal Sex with Product Terms

Ever Vaginal Sex χ^2**= 430.416**	**B**	**SE B**	**Wald**	**Exp(B)**
Parent UTB scale	.075	.031	5.973	1.078*
Teen age	.493	.033	2227.275	1.638**
Teen gender	.112	.157	.507	1.118
Parent college (some v none)	-.215	.176	1.491	.806
Parent married	-.593	.189	9.874	.553*
Parent employed	.107	.182	.344	1.112
Household income	.026	.022	1.454	1.026
Hispanic vs. White (reference)	.046	.297	.024	1.048
White vs. Hispanic (reference)	-.046	.297	.024	.955

*p <.05
**p <.001

New Findings About Parental Monitoring and Adolescent Sexual Behavior

Leslie M. Kantor
Columbia University

Abstract

This study, based on data collected from 1,663 parent-teen dyads across the United States, shows that a variety of parental monitoring behaviors are associated with reduced likelihood that teens have ever engaged in any sexual behavior, ever engaged in oral sex, or ever engaged in vaginal sex. However, parental monitoring is not significantly associated with more consistent condom or birth control use among sexually active youth. Parents report more monitoring behaviors than teens do, but parents and teens agree on the types of monitoring behaviors that are taking place. Daughters report higher levels of parental monitoring than sons, but these differences do not moderate sexual behavior outcomes. Though higher levels of monitoring are reported by teens ages 14 and younger compared to teens ages 15-21, teen age does not moderate the effects of parental monitoring on ever having engaged in any sexual behavior, oral sex or vaginal sex. Monitoring practices and levels of monitoring are similar among African American, Latino and White families and are similarly associated with behavioral outcomes for diverse teens. The association between modest increases in parental monitoring and sexual outcomes is comparable to many widely implemented program interventions. Programs that seek to help parents influence teens' sexual behavior or are working more generally to reduce teen pregnancy and sexually transmitted diseases will be strengthened by encouraging a variety of parental monitoring behaviors.

Keywords: Parental monitoring, adolescent sexual behavior

Parental monitoring is generally defined as "the acquisition of knowledge about the activities, whereabouts, and companions of one's son or daughter" (Guilamo-Ramos, Jaccard & Dittus, 2010). Kerr and Stattin (2000) note that there are three mechanisms that allow parents to acquire this knowledge: children may voluntarily disclose information, parents may solicit the information from the child directly or may ask the child's friends or the friend's parents for information and finally, parents may control children's ability to engage in whatever behavior they would like to by requiring that they seek permission or explain there whereabouts (Kerr & Stattin, 2000). Lack of parental monitoring is linked to a wide variety of adolescent health risk behaviors including alcohol, drug and cigarette use, and earlier onset of sexual activity (Guilamo-Ramos, Jaccard & Dittus, 2010, Ryan, Jorm, Kelly, Hart, Morgan & Lubman, 2011, Ryan, Jorm & Lubman, 2010, Rai et al., 2003, Borawski, Ievers-Landis, Lovegreen & Trapl, 2003, Dick, Viken, Purcell, Kaprio, Pulkkinen & Rose, 2007). Understanding how parental monitoring currently influences onset of adolescent sexual behaviors and use of condoms and birth control for sexually active adolescents is critical for guiding interventions and determining whether there are particular monitoring practices that are more strongly associated with adolescent sexual behaviors than others. Further, more knowledge about any continued differences in monitoring and supervision of sons compared to daughters could lead to more awareness by parents about the need to monitor all adolescents. Direct comparison of monitoring by African American, Latino and White families and whether any differences that exist are associated with youth behaviors is also important in tailoring interventions to a variety of families or identifying positive practices that might be recommended more widely.

There is ample evidence that parental monitoring is associated with sexual and reproductive health outcomes among youth. In a systematic review conducted by Markham et

al. on the issue of family connectedness and its link to sexual and reproductive health outcomes, 61 of 190 studies, 27 of which were longitudinal, showed that parental monitoring, operationalized to include items such as knowing where a teen was (indirect monitoring) and actual supervision of the teen (direct monitoring) was associated with delaying first intercourse, improved contraceptive and condom use, and reduced likelihood of contracting an STD (Markham, Lormand, Gloppen, Peskin, Flores, Low & House, 2010). In an international comparison of nine countries, parents' knowledge of teens' friends, how teens spent money, and where teens were after school, at night and during their free time was associated with a lower likelihood of early sex, suggesting again that monitoring can have protective effects (Madkour, Farhat, Halpern, Gabhainn & Godeau, 2012). More evidence exists to support a protective association between parental monitoring and sexual outcomes for African American youth than among White youth (Crosby, DiClemente, Wingood, Lang, & Harrington, 2003, Di Clemente et al., 2001, Stanton, Li, Pack, Cottrell, Harris, & Burns, 2002).

One important gap in the literature is that many studies do not allow for direct comparisons of monitoring practices among diverse families. Markham et al. note that, in their review, no longitudinal studies present results for Latino, Asian, or Native American youth (Markham et al., 2010). Thus, less is known about whether monitoring practices differ or whether results of monitoring vary among families of different racial and ethnic backgrounds. Another gap is that few studies are able to examine monitoring and evaluation from both the parent and adolescent perspectives as data are frequently obtained only from parents or only from teens.

This study seeks to address this gap in the literature by utilizing data from a sample with sufficient numbers of African American, Latino and White families to allow for comparisons

and with reports from both parents and teens which allows for examination of differences in monitoring among families and analysis of whether monitoring and supervision differs for sons compared to daughters and whether any differences in monitoring are associated with different behavioral outcomes.

Hypotheses for the study were as follows:

Hypothesis 1a: Higher levels of parental monitoring and supervision will be associated with reduced odds of ever having engaged in any sexual activity.

Hypothesis 1b: Higher levels of parental monitoring and supervision will be associated with reduced odds of ever having engaged in oral sex.

Hypothesis 1c: Higher levels of parental monitoring and supervision will be associated with reduced odds of ever having engaged in vaginal intercourse.

Hypothesis 1d: Higher levels of parental monitoring and supervision will be associated with more consistent use of condoms in the past 3 months.

Hypothesis 1e: Higher levels of parental monitoring and supervision will be associated with more consistent use of birth control in the past 3 months.

The second set of hypotheses relates to whether monitoring and supervision will affect behavior similarly for African American, Hispanic and White teens.

Hypothesis 2a: Higher levels of reported monitoring and supervision will show comparable associations (i.e., non-significant differences in associations) with having ever engaged in any sexual activity, for White, African American and Latino teens.

Hypothesis 2b: Higher levels of reported monitoring and supervision will show comparable associations (i.e., non-significant differences in associations) with having ever engaged in vaginal intercourse for White, African American and Latino teens.

Hypothesis 2c: Higher levels of reported monitoring and supervision will show comparable associations (i.e., non-significant differences in associations) with having ever engaged in oral sex for White, African American and Latino teens.

Hypothesis 2d: Higher levels of reported monitoring and supervision will show comparable associations (i.e., non-significant differences in associations) with consistent condom use in the past 3 months for White, African American and Latino teens.

Hypothesis 2e: Higher levels of reported monitoring and supervision will show comparable associations (i.e., non-significant differences in associations) with consistent birth control use in the past 3 months for White, African American and Latino teens.

The third set of hypotheses explores whether monitoring and supervision has a different effect on teen females compared to teen males.

Hypothesis 3a: Higher levels of monitoring and supervision will show comparable associations (i.e., non-significant differences in associations) with having ever engaged in any sexual activity for teen females and males.

Hypothesis 3b: Higher levels of monitoring and supervision will show comparable associations (i.e., non-significant differences in associations) with having ever engaged in vaginal intercourse for teen females and males.

Hypothesis 3c: Higher levels of monitoring and supervision will show comparable associations (i.e., non-significant differences in associations) with ever having engaged in oral sex for teen females and males.

Hypothesis 3d: Higher levels of monitoring and supervision will show comparable associations (i.e., non-significant differences in associations) with consistent condom use in the past 3 months for teen females and males.

Hypothesis 3e: Higher levels of monitoring and supervision will show comparable associations (i.e., non-significant differences in associations) with consistent birth control use for teen females and males.

Methods

The current study utilizes data collected from 1,663 parent-child dyads in July, 2014 by Gfk, Inc. Gfk, Inc. has constructed a large, diverse panel of adults in the United States. They recruit their panel using a combination of random digit dial phone techniques and address based sampling. Gfk provides weights to adjust their panel to be representative of US adults (using Community Population Survey benchmarks), with respect to key demographics (age, education, household income, Internet access, Census region, metro status, race/ethnicity, and gender). However, a preliminary analysis of the demographics of this sample with and without the weights, as well as the teen outcome behaviors, found that the weights did not fully correct for differences between the sample and the general population, particularly in regards to marital status (the Gfk panel is more likely to be married than the general population) and educational attainment (the Gfk panel is more highly educated). Because the weights did not fully correct for differences, the unweighted results are reported here. More information on the construction of the overall Gfk, Inc. panel is available at: http://www.gfk.com/us/Pages/default.aspx Parents were sampled from the broader Gfk, Inc. panel using e-mail invitations and asked to consent on behalf of themselves and one of their children between the ages of 9 and 21. For non-Latino White parents, a random selection of parents were invited. All Latino and African American parents in the panel were invited to participate. An algorithm was used to request which of the parent's children to invite when a parent had more than one child in the eligible age group which was age 9-21. The organization requesting the data had a particular interest in 15-19 year

olds and the algorithm was constructed accordingly. Within a household, when there was more than 1 child in the 9-21 year old age range, 15-19 year olds were selected at a 3:1 ratio (e.g. when there was a 15-19 year old and a 9-14 year old or a 20-21 year old in the same household, for every three times a 15-19 year old was selected, a non-15-19 year old was selected one time). The final sample included 749 teens ages 14 and younger, 740 teens ages 15-19, and 174 teens ages 20-21.

In addition to parental consent, teens assented for their own participation in the study. The parent questionnaire contained 91 items and the teen questionnaire contained 46 items. The median completion time was 17 minutes. Seven hundred eleven Whites, 300 African Americans and 652 Latino dyads completed the surveys. One thousand eighty one mothers and 582 fathers completed the surveys and 801 girls and 862 boys completed the surveys. Surveys for parents were customized using the name of the child that parents stated would take the survey and teen surveys were customized to include the term father or mother based on which parent had completed the survey.

Measures

Seven items were asked of both teens and parents related to monitoring and supervision. Items on the teen questionnaire are followed by the wording used in parent questionnaire in parentheses:

1. My [father/mother] knows a lot about how I'm doing in school. (I know a lot about how [name of child] is doing in school.)
2. My [father/mother] has met everyone that I've dated. (I've met everyone [name of child] has dated.)

3. My [father/mother] knows most of my friends. (I know most of [name of child's] friends.)
4. My [father/mother] knows most of my friends' parents. (I know most of [name of child's] friends' parents.)
5. There are house rules about who I am allowed to be with in the house when my [father/mother] isn't home. (I have house rules about who is allowed to be in the house when I'm not home.)
6. I tell my [father/mother] a lot about what is going on with my life. ([Name of child] tells me a lot about what is going on in [his/her] life).
7. I hide a lot of information from my [father/mother]. ([Name of child] hides a lot of information from me.)

Outcome measures were asked of the teens:

1. Have you ever engaged in any sexual behavior (touching without clothes on or oral, vaginal or anal sex) with another person?

2. Have you ever had oral sex (penis or vagina in mouth)?

3. Have you ever had vaginal sex (penis in vagina)?

4. In the past 3 months, have you had vaginal sex?

5. In the past 3 months, how often have you or your partner used condoms when you've had vaginal sex?

6. In the past 3 months, how often have you or your partner used a birth control method other than condoms when you've had vaginal sex (e.g. the pill, ring, IUD, etc.)?

Response categories for items 1-4 were "yes" and "no". Response categories for items 5 and 6 were a 5-point scale to indicate "every time," "more than half the time," "about half the time,"

"less than half the time," and "never." Skip patterns were utilized so that only respondents that indicated "yes" on ever engaging in any sexual behavior were asked specifically about oral and vaginal sex and so that only those that indicated sex in the past 3 months were asked about condom and birth control use in the past three months. These outcome measures were previously utilized in the National Longitudinal Study of Adolescent Health, commonly referred to as "Add Health." (Bearman, Jones & Udry, 1997). Items 1-4 were included without modification. Items 5-6 were slightly modified to fit a three-month recall and the response options were slightly re-worded.

Covariates

The covariates of interest are based on a large extant literature on key determinants of sexual behavior: age of teen, gender of teen, race/ethnicity, household income, parental marital status, parental educational attainment, and parent's current employment status. Gender and age of teen were both verified on the survey. Other covariates were based on data collected by Gfk when adults enrolled to be part of their panel and were re-verified annually. Race/ethnicity was provided for parents and teens were assumed to be the same race/ethnicity as their parents for purposes of these analyses. Although there are some cases where this may not be true, given the sample size, these cases of race/ethnicity difference between parents and their children should not be widespread enough to cause shifts in the conclusions.

Analytic Strategy

Analyses were conducted using SPSS 22. Descriptive statistics were examined for all of the monitoring and supervision items utilized in these analyses for both the parent and teen samples and the data were examined to assess non-normality and the presence of outliers that could distort fundamental trends in the data. The presence of outliers was minimal and the size

of the data set ensured that these outliers would not shift fundamental trends in the data. Paired t-tests were used to ascertain differences in parent compared to teen reports about monitoring and supervision. Multivariate analyses were performed in SPSS to examine each monitoring item and the outcomes (whether or not adolescents had ever engaged in any sexual behavior, whether or not adolescents had ever engaged in oral sex, whether or not adolescents had ever engaged in vaginal sex, consistency of condom use in the past 3 months, and consistency of birth control use, other than condoms, in the past 3 months) utilizing all covariates of interest.

Correlations between the monitoring and supervision items were examined to ascertain whether items could be appropriately collapsed into a scale or whether individual items ought to be considered in their own right. Mplus 7 was utilized to perform confirmatory factor analyses, which indicated a good fit of a single factor solution allowing for correlated errors between some of the monitoring and supervision items. However, the individual scale items were found to have large percentages of unique variance, suggesting that the items were not appropriately collapsed and should be utilized in analyses as individual items rather than aggregated. Thus, each monitoring and supervision item was considered separately in models and was tested to determine if any interactions existed between any monitoring variable and race/ethnicity or gender. A preliminary analysis suggested that the weights provided by Gfk to adjust sample data to nationally representative metrics did not fully correct for differences between the sample and the general population so the unweighted results are reported here. Models were run with both teen and parent reports of monitoring and supervision. An alpha level of .05 was used to evaluate statistical significance.

Results

Preliminary Analyses

Base rates of each of the outcome variables were examined by gender. There were no statistically significant differences in having ever engaged in any sexual behavior between teen females and males, in having ever engaged in vaginal sex between teen females and males, or in ever having oral sex between teen males and females. There was a significant difference in reports between males and females in reports of consistent condom use in the past 3 months, with males reporting more consistent condom use than females. There was no significant difference in reports of consistent birth control use by gender.

A one-way ANOVA test was used to examine the mean age of each racial/ethnic group. The mean age for White teens was 15 years old, for Black teens was 14.71 years old and for Hispanics was 14.48 years old. There is a statistically significant difference in the ages of the White and Hispanic teens in the sample.

Means for teen and parent reports for each of the monitoring and supervision items are included in Table 1. Paired-samples t-tests were used to ascertain whether there were significant differences in the means for parent and teen samples. For each item, parents reported a statistically significantly higher level of monitoring and supervision than teens ($p < .05$) (See Table 1). Teen and parent reports were considered separately in the multivariate models. Given that teen reports are established as stronger drivers of behavior, only teen reports were examined for final models (Jaccard, Dittus & Gordon, 1998.)

Each individual monitoring and supervision item was examined by gender and race/ethnicity for the teen reports to ascertain whether there were any statistically significant differences in the reported monitoring and supervision between sons and daughters or between African American, Hispanic and White teens. A t-test of independent samples were used to compare teen males and females. There were significant differences between male and female

teens reports on monitoring and supervision, for every item with girls reporting higher levels of monitoring and supervision than boys (See Table 2). A t-test of independent samples was also examined to ascertain any differences in reported monitoring between mothers and fathers. There were only two significant differences in monitoring practices reported by mothers compared to fathers. Mothers were more likely to reporting knowing most of their teens' friends' parents than fathers ($p < .05$) and mothers were more likely to report that they had house rules for who is allowed to be in the house when they aren't home ($p < .001$).

One-way ANOVAs were utilized to examine each monitoring and supervision item by race/ethnicity. Out of seven items, only two items showed significant differences by race and ethnicity. There were significant differences between Black teens compared to White and Hispanic teens on the item "My (father/mother) has met everyone that I've dated." For this item, on average, Black teens were less likely to report that their father/mother had met everyone they've dated than White and Hispanic teens. There was no significant difference between White and Hispanic teens on the item. The other item with significant differences by race/ethnicity was related to house rules. Black teens, on average, were more likely than White and Hispanic teens to report that there were house rules about who they are allowed to be with in the house when a parent isn't home than either Hispanic or White teens. There were no significant differences between White and Hispanic teens on this item. See Table 3 for reports on monitoring and supervision items by race and ethnicity.

Multivariate Analyses

Multivariate regression analyses for each of the monitoring items were conducted along with all of the covariates of interest: teen age, teen gender, household income, parental educational attainment, parental employment status, and parental marital status. For monitoring

and supervision item 1, "My (father/mother) knows a lot about how I am doing in school," logistic regression results for "ever engaging in any sexual behavior" show that for every unit increase in teens reporting that their parent knows a lot about how they are doing in school, the odds of having engaged in any sexual behavior are lower, odds ratio, .902. (See Table 4.) For oral sex, for every unit increase in teens' reporting that their parents know a lot about how they are doing in school, the odds that they have engaged in oral sex are reduced, odds ratio, .886. (See Table 5). For vaginal sex, however, there is no evidence of reliable change in the probability of having engaged in sexual behavior based on monitoring item 1 as is shown in Table 6. There is no significant difference in consistency of condom or birth control use based on monitoring item 1. (See Tables 7 and 8.)

For monitoring item 2, "My (father/mother) knows everyone that I've dated," for each unit increase in teens' reporting that their parent knows everyone that they've dated, the odds that they have engaged in any sexual behavior are reduced, (odds ratio .902), the odds that they have engaged in vaginal sex is reduced (odds .910) and the odds that they have engaged in oral sex are reduced (odds ratio .880). (See Tables 9, 10 and 11.) There is also a significant association between monitoring item 2 and consistent birth control use such that for every unit increase in teens' reporting that their parent has met everyone they've dated, they are 10.8 percent more likely to report consistent birth control use (See Table 13). There is no significant association between monitoring item 2 and consistent condom use (See Table 12).

On monitoring and supervision item 3, "My (father/mother) knows most of my friends," a higher level of monitoring and supervision lowers the odds of teens having ever engaged in any sexual behavior, ever having engaged in oral sex, and having ever having engaged in vaginal sex. For any sexual behavior, for every unit increase in teens' reporting that their father

or mother knows most of their friends, the odds that the teen has ever engaged in any sexual behavior is reduced, odds ratio, .874, the odds of having ever engaged in vaginal sex is reduced, odds ratio, .884 and the odds that they have ever engaged in oral sex is reduced, odds ratio, .879. See Tables 14, 15 and 16. There was no significant association between increased monitoring and consistent condom use or consistent birth control use. (See Tables 17 and 18.)

For monitoring and supervision item 4, "My (father/mother) knows most of my friends' parents," for each unit increase on the item, the odds of having engaged in sexual behavior decreases. For having ever engaged in any sexual behavior, the odds decrease, odds ratio, .876, for vaginal sex the odds decrease, odds ratio, .892, and for oral sex, the odds decrease, odds ratio, .865. See Tables 19, 20 and 21. There were no statistically significant associations with consistent condom or birth control use. (See Tables 22 and 23).

For monitoring and supervision item 5, "There are house rules about who is allowed to be in the house when my father/mother isn't home," the only statistically significant finding with the model was with reductions in oral sex, such that for each unit increase in teen reports that there are house rules, the odds of a teen having engaged in oral sex were reduced, odds ratio .933. See Table 25. There were no significant findings for monitoring item 5 and ever engaging in any sexual behavior, ever engaging in oral sex, consistency of condom use or consistency of birth control use. (See Tables 24, 26, 27 and 28).

For item 6, "I tell my (father/mother) a lot about what is going on in my life, for each unit increase in teens reporting telling their parent a lot, the odds of having ever engaged in any of the sexual behavior outcomes declines: for any sexual behavior, the odds ratio is .860, for ever having engaged in vaginal sex, the odds ratio is .884 for having ever engaged in oral sex, the odds ratio is .855. See Tables 29, 30 and 31. There were no significant associations between

telling parents a lot about what is going on and consistent condom or birth control use. See Tables 32 and 33.

For item 7, "I hide a lot of information from my father/mother," the item was reverse coded and then analyzed in the multivariate model. For each unit reduction in teens reporting they hide a lot of information from their parent, the odds that they have ever engaged in any sexual behavior declines, odds ratio, .860 as is illustrated in Table 34. The odds that they have engaged in vaginal sex also declines, odds ratio, .884 (See table 36). The odds of having ever engaged in oral sex declines, odds ratio .855 (See table 35). There are no significant associations between monitoring item 7 and consistent condom or birth control use. See Tables 37 and 38.

Consideration of a Monitoring and Evaluation Scale

The monitoring items were analyzed to see if the items were appropriately aggregated into a scale. Correlations between the items, as well as a confirmatory factor analysis, showed a single factor model that allowed for errors to correlate for select items on the teen and parent reports resulted in a model with good model fit. For the scales, correlated errors were included for items 3 and 4 ("My father/mother knows most of my friends" and "My father/mother knows most of my friends parents") and for items 6 and 7 ("I tell my father/mother a lot about what is going on" and "I hide a lot from my father/mother"). Substantively, these are related which is likely why they would be bringing correlated errors into the scale. Once the correlated errors were included, global fit indices for the parent scale were: (χ^2 (74)=336.932, $p < .001$), SRMR =0 .05, CFI =0 .92, RMSEA =0 .046 and for the teen scale were: (χ^2 (74)=367.396, $p < .001$), SRMR = 0.051, CFI = 0.915, RMSEA = 0.049. Chi-square was significant but is sensitive to sample size, which is likely the driver of these results. The other measures indicate good fit

which suggested it was appropriate to collapse the items into a scale for analyses. However, subsequent examination of the common and unique variance of each item showed a high percentage of unique variance, on the parent scale ranging from 38.1 to 85.1 and on the teen from 45.1 to 88.2, which suggested it was more appropriate to consider the items in their own right as each contributes important, distinct information which is not captured by the underlying latent construct. Thus, remaining analyses continued to consider each monitoring item individually.

Does Monitoring Affect Outcomes Similarly for Boys/Girls and for African American, Latino and White youth?

Interactions were examined for every teen monitoring and supervision item by creating and analyzing product terms for each race/ethnicity combination and for each monitoring item with teen gender. Regression equations were then run for each outcome including the computed interaction terms. There were no significant product terms related to gender.

In terms of race/ethnicity, there was a significant product term coefficient (1.215, $p < .05$) for White and monitoring item 5: "There are house rules about who I am allowed to be with in the house when my father/mother isn't home." For White teens, for every unit increase in reports of house rules, the odds that they had ever engaged in vaginal sex decreased (odds ratio = 0 .926, $p < .05$).

For ever oral sex, there is an interaction for Blacks compared to Hispanics (1.221, $p < .05$) and Hispanics compared to Blacks (.891, $p < .05$). For Hispanic teens, there is a significant product term coefficient (.896, $p < .05$) between house rules and oral sex. For every unit increase in reports of parents' having house rules about who can be there when the parent isn't present, the odds that Hispanic teens have engaged in oral sex decreases. For Black teens, for

every unit increase in reports of house rules, the odds of having engaged in oral sex increases (odds ratio = 1.094, ns). Because the product term is significant but the interaction coefficient is not, this no longer constitutes a significant interaction.

Thus, hypotheses 2 is generally supported that monitoring operates similarly among racial and ethnic groups since there are only exceptions related to one monitoring item and only for select behaviors and racial/ethnic groups for that item. Most likely these interactions are due to chance.

In addition, since there were no significant interactions between teen gender and any of the monitoring variables for any of the outcome behaviors. Thus, hypotheses 3a-3e which posit that monitoring will function similarly for teen females and teen males are supported.

Examination of Potential Moderation of Monitoring and Behavior by Age

In general, monitoring by parents tends to be greater for younger teens than older teens, and sexual behavior and age are also highly correlated. That is true in this sample as well as is shown in Table 39. For all but one monitoring item, there is more than a 10 percentage point drop in reports that teens "strongly agree" that each monitoring item is taking place when comparing teens 14 and younger to those 15 and older. The one item without a substantial drop is the item related to parents meeting everyone a teen has dated which had a large proportion of missing data given that it was not relevant to most of the teens in the sample that were age 14 or younger.

The potential moderating effects of teen age were examined by creating product terms for age and each monitoring variable and utilizing those product terms in a series of multivariate regressions. Overall, age did not moderate the relationship between monitoring and teens' sexual behavior with a few exceptions. Age and monitoring item 3, "My parents know most of

my friends," did interact when the dependent variable was vaginal sex (.023, p <.05). To illustrate, at age 15, the decrease in odds was odds ratio = .840, p <.05, and at age 18 the decrease was lower (odds ratio = .900, p <.05). Thus, there is an effect of knowing most of a teen's friends on reducing ever vaginal sex but the power of the effect decreases as teens get older.

When the dependent variable was consistent birth control use during the past three months, there were two significant interactions. Age and monitoring item 1, "My father/mother knows a lot about how I am doing in school" yielded a statistically significant product term coefficient, .055, $p < 0.05$. This interaction was examined for select ages which showed that while at age 12, the regression coefficient linking monitoring to consistent birth control use was statistically significant (coefficient =-0.287, $p < 0.05$) the significance was lost for the regression coefficient at age 15 (regression coefficient = -.121, ns), as well as at age 18 (regression coefficient= .045, ns). Thus, although there was an interactive trend for the overall product term coefficient, an examination at select ages did not yield meaningful, statistically significant effects. These same dynamics were observed for the second interaction related to consistent birth control use and monitoring item 5, "There are house rules about who I am allowed to be with in the house when my father/mother isn't home." The overall product term regression coefficient was .041 ($p < 0.05$). At age 12, the coefficient for consistency of use regressed onto monitoring was -.279 (ns), at age 15 it was -.156 (ns) and at age 18 it was -.032 (ns). In addition to the non-significant coefficients, these effects need to be interpreted keeping in mind that only 125 teens in the study reported any birth control use other than condoms in the past 3 months.

Finally, the interaction related to age was for monitoring item 7, "I hide a lot of information from my father/mother," on the dependent variable consistent condom use also revealed a significant product term coefficient (-.045, $p < 0.05$) but no statistically significant coefficients for ages that exist within the sample. For example, at age 12, the regression coefficient linking monitoring to consistent birth control uses was .262 (ns), at age 15 it was .126 (ns), and at age 18 it was 0.10 (ns). Once again, this analysis needs to be interpreted keeping in mind that only 154 teens in the study report any condom use in the past 3 months.

Thus, overall, there are not significant interactions between monitoring and sexual behavior for teens as a function of their age. Monitoring continues to be associated with lower odds of having engaged in sexual behavior for teens of all ages, with the very few exceptions noted above.

Discussion

Five out of seven parental monitoring behaviors examined in this study and reported by teens were significantly associated with declines in the odds that teens had ever engaged in any sexual behavior, had ever engaged in oral sex, and had ever engaged in vaginal intercourse. One monitoring behavior, knowing how well teens were doing in school, was associated with declines in the odds that teens had engaged in any sexual behavior or in oral sex and one monitoring behavior, having house rules about who is allowed to be in the house when the parent isn't home was associated with reduced odds of oral sex. For each unit increase in teens reporting their parents had met everyone they had dated, consistency of birth control use in the past 3 months increased. To give a sense of the magnitude of these effects, there are a set of teen pregnancy prevention programs that have been included on the United States Department of Health and Human Services list of evidence based programs. According to an analysis by

Terzian and Sacks (2014), odds ratios for programs considered effective on this list include 5 programs with odds ratios for reducing sexual activity between .83 and .98. Thus, the findings from several programs considered effective are comparable to the effects of teen sexual behavior presented in this study resulting from each unit increase in monitoring by parents. However, parental monitoring was not significantly associated with consistent use of condoms and birth control, with the exception of the monitoring item related to meeting dating partners.

The parenting practices examined in this study are mainly generalized monitoring behaviors, which may or may not be thought of by parents as ways to influence their teens' sexual behavior. The fact that these monitoring behaviors have significant associations with delays in sexual activity, suggests that parents ought to be made aware that all of these parenting behaviors have effects in the realm of sexual behavior. In addition, interventions should integrate helping parents to engage in a range of monitoring practices into programs and other outreach efforts.

The fact that monitoring has effects on teens' behavior throughout adolescence is a particularly noteworthy finding. There are very few monitoring behaviors found in this study to interact with age and those that exist are only for select sexual behaviors and may be attributed to chance, suggesting that monitoring influences adolescent sexual behavior for teens of all ages. Thus, even though levels of monitoring go down as their adolescent matures, the effects of monitoring are still robust as teens' age.

Both parents and teens in this study agree that the areas in which the highest level of monitoring is taking place are knowing how teens are doing in school and having house rules related to who is allowed to be in the house when parents aren't home. The lowest levels of monitoring exist for meeting everyone a teen has dated and knowing the parents of teens'

friends. Because the teen group is as young as age 9, the dating variable was skipped for a large portion of the sample youth. However, this study indicates that there is an opportunity to increase interaction with dating partners and families of teens' friends, which may be protective for youth. Further, the one finding of an association between monitoring and consistent birth control use was that teens that agree more strongly that their parents have met everyone they have dated are more likely to report consistent use of birth control (other than condoms) for the past 3 months. There are a few ways to interpret this finding. First, it could be that young people in more serious relationships are both more likely to seek out birth control methods other than condoms and to introduce their partners to their parents. However, it could also be that relationships that are more integrated into family relationships offer opportunities for parents to encourage birth control use. The lack of a similar finding related to condom use may be due to the fact that condom use is now so normative among teens that parental monitoring and supervision is simply not an important driver of the behavior. It is also plausible that more generalized monitoring and supervision behaviors, which do not directly address the need for condom and birth control use are unlikely to make a difference on those particular behaviors.

In terms of gender, there are significant differences in monitoring reports between adolescent girls and boys, with girls reporting more parental monitoring than boys. This difference suggests an opportunity to raise awareness particularly among the parents of boys about the importance of parental monitoring and to encourage similar monitoring of both daughters and sons. Both mothers and fathers report similar levels of monitoring behavior of their teens.

In general, reports of parental monitoring by Black, Hispanic and White teens were similar. There were only two exceptions, on the items, "my father/mother has met everyone

that I've dated," on which Black teens report less agreement with than either Hispanic or White teens and "there are house rules about who I am allowed to be with in the house while my father/mother isn't home" on which Black teens are more likely to agree than White or Hispanic teens. Further, monitoring and supervision function similarly among Black, Latino and White teens. The only exceptions were related to house rules. Agreeing more strongly that there are house rules for who is allowed to be present when a parent isn't home lowers the odds of both vaginal sex and oral sex among Black teens, compared to White teens (for vaginal sex) and Hispanic teens (for oral sex). However, for Hispanic teens (compared to Black teens), house rules are associated with increases in the odds of oral sex. There are various possible interpretations of these findings. It may be that in some families, dating or moving toward sexual activity spurs parents to put more house rules in place about who is allowed to be there whereas in other families, having the rules in place acts as a deterrent to sexual activity. Because we do not know whether house rules precede or follow sexual activity in this study, it is difficult to interpret the relationship.

There are a number of implications of these collective findings. First, interventions for parents should ensure that the importance of monitoring is emphasized and that parents are aware that practices that may be seen as a general part of the parenting can have bearing on their children's sexual decision-making and behavior. Parents should be encouraged around a few particular behaviors, which are less commonly reported but have strong associations with adolescent sexual behavior—meeting the parents of their children's friends and meeting the parents of their children's boyfriend or girlfriend. There are important opportunities to increase monitoring of sons to be more in line with monitoring of daughters. Monitoring practices across diverse families and the effects that monitoring has on adolescent sexual behavior are

similar but there may be some dynamics which vary such as putting more rules in place in response to sexual activity, that differ among diverse families and merit further exploration. In addition, engaging in sexual activity is normative for older teens and more work needs to be done to explore how parents can best support sexually active teens in taking care of their sexual and reproductive health as the monitoring behaviors explored here were not generally associated with increases in the use of condoms and birth control.

Limitations

There are several limitations to the current study. First, these are cross-sectional data, which do not allow for the opportunity to determine the temporal relationship between monitoring and sexual behavior. Thus, some monitoring behaviors may be a reaction to young people's relationships and sexual activity rather than preceding relationships and sexual activity. Age of onset of sexual activities was not included as a variable in this dataset. The sample of teens is less sexually active than comparably aged teens as measured by the National Survey of Family Growth and the Youth Risk Behavior Survey. However, the large sample size and the fact that the study allows for direct comparisons of African American, Hispanic and White families makes this study and its analyses an important contribution to the literature given that most studies do not have the opportunity for direct comparisons of diverse families. The opportunity to examine reports by both parents and teens and by mothers and fathers, daughters and sons also provides new insights about monitoring practices and their influence on adolescent sexual behavior.

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Tables

Table 1: Mean Scores for Teens and Parents on Monitoring and Supervision Items

Item	Teen	Parent
Monitoring 1: My [father/mother] knows a lot about how I'm doing in school. (I know a lot about how [name of child] is doing in school.	8.77* (SD: 2.104)	8.93* (SD: 1.764)
Monitoring 2: My [father/mother] has met everyone that I've dated. (I've met everyone [name of child] has dated.	6.64* (SD: 3.493)	7.42* (SD: 3.039)
Monitoring 3: My [father/mother] knows most of my friends. (I know most of [name of child's] friends]	7.90* (SD: 2.489)	8.11* (SD: 2.224)
Monitoring 4: My [father/mother] knows most of my friends' parents. (I know most of [name of child's] friends' parents.	6.21* (SD: 3.093)	6.39* (SD: 2.860)
Monitoring 5: There are house rules about who I am allowed to be with in the house when my [father/mother] isn't home. (I have house rules about who is allowed to be in the house when I'm not home.)	8.26* (SD: 2.757)	8.82* (SD: 2.170)
Monitoring 6: I tell my [father/mother] a lot about what is going on with my life. ([Name of child] tells me a lot about what is going on in [his/her] life).	7.42* (SD: 2.721)	7.88* (SD: 2.296)
Monitoring 7: (Reverse coded): I hide a lot of information from my [father/mother].	7.40* (2.871)	7.61* (SD: 2.603)

* = Significant difference between parents and teens, $p < .05$

Table 2: Monitoring and Supervision Reports by Gender for Teens

Item	Girls	Boys
My [father/mother] knows a lot about how I'm doing in school. (I know a lot about how [name of child] is doing in school.	8.89* (SD 2.068)	8.65* (SD 2.132)
My [father/mother] has met everyone that I've dated. (I've met everyone [name of child] has dated.	7.06* (SD 3.457)	6.28* (SD 3.486)
My [father/mother] knows most of my friends. (I know most of [name of child's] friends]	8.12* (SD 2.309)	7.69* (SD 2.628)
My [father/mother] knows most of my friends' parents. (I know most of [name of child's] friends' parents.	6.45* (SD 3.049)	5.98* (SD 3.117)
There are house rules about who I am allowed to be with in the house when my [father/mother] isn't home. (I have house rules about who is allowed to be in the house when I'm not home.)	8.44* (SD 2.637)	8.09* (SD 2.854)
I tell my [father/mother] a lot about what is going on with my life. ([Name of child] tells me a lot about what is going on in [his/her] life).	7.64* (SD 2.684)	7.21* (SD 2.739)
I hide a lot of information from my [father/mother]. ([Name of child] hides a lot of information from me.) (Reverse coded)	7.66* (SD 2.825)	7.16* (SD 2.894)

* = Significant difference between teen females and males, $p < .05$

Table 3: Monitoring and Supervision: Teen Reports by Race and Ethnicity

Item	White	Black	Hispanic
My [father/mother] knows a lot about how I'm doing in school. (I know a lot about how [name of child] is doing in school.	8.76 (SD 1.943)	8.80 (SD 2.233)	8.76 (2.210)
My [father/mother] has met everyone that I've dated. (I've met everyone [name of child] has dated.	6.94 (SD 3.332) [a]	5.92 (SD 3.735)[a, c]	6.63 (SD 3.513) [c]
My [father/mother] knows most of my friends. (I know most of [name of child's] friends]	7.88 (SD 2.319)	7.92 (SD 2.610)	7.91 (SD 2.612)
My [father/mother] knows most of my friends' parents. (I know most of [name of child's] friends' parents.	6.06 (SD 3.007)	6.47 (SD 3.197)	6.25 (3.131)

There are house rules about who I am allowed to be with in the house when my [father/mother] isn't home. (I have house rules about who is allowed to be in the house when I'm not home.)	8.10 (SD 2.764) [a]	8.75 (SD 2.517) [a, c]	8.20 (2.832) [c]
I tell my [father/mother] a lot about what is going on with my life. ([Name of child] tells me a lot about what is going on in [his/her] life).	7.41 (SD 2.610)	7.38 (SD 2.838)	7.44 (SD 2.788)
Reverse coded item 7: I hide a lot of information from my [father/mother].	7.47 (SD 2.661)	7.20 (SD 3.151)	7.41 (SD 2.957)

a = Statistically significant difference between Black and White teens on item

b = Statistically significant difference between Hispanic and White teens on item

c = Statistically significant difference between Black and Hispanic teens on item

Table 4: Final Model Teen Reports of Monitoring Variable 1, "My [Father/Mother] Knows A Lot About How I am Doing In School" and Ever Having Engaged in Any Sexual Behavior

Any sexual touching ***X^2= 465.328***	***B***	**SE**	**Wald**	**Exp(B)**
Monitoring Variable 1	-.103	.031	11.056	.902*
Teen Age	.457	.029	251.329	1.579**
Teen Gender	.100	.146	.467	1.105
Household Income	.030	.020	2.101	1.030
White vs. Hispanic (reference)	.242	.171	2.004	1.274
Black vs. Hispanic (reference)	.110	.213	.268	.876
Hispanic vs. White (reference)	-.242	.171	2.004	.785
Parental Education	-.097	.166	.338	.908
Parental Employment status	.144	.169	.725	1.155
Parental Marital Status	-.811	.175	21.590	.444**

*p <.05
**p <.001

Table 5: Final Model Teen Reports of Monitoring Variable 1, "My [Father/Mother] Knows A Lot About How I am Doing In School" and Ever Having Engaged in Oral Sex

Ever oral sex $X^2 = 332.022$	***B***	**SE**	**Wald**	**Exp(B)**
Tmon1	-.122	.035	11.873	.886*
Teen Age	.437	.034	162.364	1.548**
Teen Gender	.160	.173	.864	1.174
Household Income	.106	.026	17.314	1.112**
White vs. Hispanic (reference)	.386	.203	3.625	1.1472
Black vs. Hispanic (reference)	.074	.259	.082	1.077
Hispanic vs. White (reference)	-.386	.203	3.625	.680
Parental Education	-.137	.196	.488	.782
Parental Employment status	-.090	.202	.198	.914
Parental Marital Status	-.991	.209	22.402	.371**

*p <.05
**p <.001

Table 6: Final Model Teen Reports of Monitoring Variable 1, "My [Father/Mother] Knows A Lot About How I am Doing In School" and Ever Having Engaged in Vaginal Sex

Ever vaginal sex ***X^2= 390.845***	***B***	**SE**	**Wald**	**Exp(B)**
Tmon1	-.042	.035	1.445	.959
Teen Age	.497	.034	212.566	1.644**
Teen Gender	.036	.162	.050	1.037
Household Income	.025	.023	1.161	1.025
White vs. Hispanic (reference)	.369	.192	3.711	1.447
Black vs. Hispanic (reference)	.334	.236	1.999	1.397
Hispanic vs. White (reference)	-.369	.192	3.711	.691
Parental Education	-.191	.183	1.088	.826
Parental Employment status	.051	.188	.074	1.052
Parental Marital Status	-.688	.194	12.509	.503**

*p <.05
**p <.001

Table 7: Final Model Teen Reports of Monitoring Variable 1, "My [Father/Mother] Knows A Lot About How I am Doing In School" and Consistency of Condom Use in the Past 3 Months

Condom consistency ***R^2=.121***	***B***	**SE**	**T**	**Sig**
Tmon1	.016	.051	.322	.748
Teen age	-.010	.059	-.166	.868
Teen gender	.765	.237	3.228	.002
Household Income	-.004	.035	-.114	.910
White vs. Hispanic (reference)	.576	.273	2.110	.036*
Black vs. Hispanic (reference)	.743	.349	2.126	.035*
Hispanic vs. White (reference)	-.576	.273	-2.110	.036*
Parental Education	.271	.277	.978	.330
Parental Employment status	-.116	.279	-.415	.679
Parental Marital Status	.457	.274	1.672	.097

*p <.05
**p <.001

Table 8: Final Model Teen Reports of Monitoring Variable 1, "My [Father/Mother] Knows A Lot About How I am Doing In School" and Consistency of Birth Control Use (other than condoms) in the Past 3 Months

Birth control consistency ***R^2=.083***	***B***	**SE**	**T**	**Sig**
Tmon1	.029	.063	.461	.645
Teen age	.072	.073	.983	.327
Teen gender	-.121	.294	-.412	.681
Household Income	-.093	.045	-2.085	.039*
White vs. Hispanic (reference)	1.004	.340	2.951	.004*
Black vs. Hispanic (reference)	.574	.434	1.323	.188
Hispanic vs. White (reference)	-1.004	.340	-2.951	.004*
Parental Education	.334	.342	.977	.330
Parental Employment status	.148	.345	.430	.667
Parental Marital Status	.003	.343	.009	.993

*p <.05
**p <.001

Table 9: Final Model Teen Reports of Monitoring Variable 2, "My [Father/Mother] Has Met Everyone I've Dated" and Ever Having Engaged in Any Sexual Behavior

Any sexual touching ***X^2= 293.137***	***B***	**SE**	**Wald**	**Exp(B)**
Monitoring Variable 2	-.103	.023	20.538	.902**
Teen age	.427	.033	170.267	1.533**
Teen gender	.020	.153	.017	1.020
Household Income	.030	.021	2.002	1.030
White vs. Hispanic (reference)	.415	.180	5.314	1.515*
Black vs. Hispanic (reference)	.145	.225	.419	1.157
Hispanic vs. White (reference)	-.415	.180	5.314	.660*
Parental Education	-.141	.172	.671	.868
Parental Employment Status	.114	.178	.407	1.120
Parental Marital Status	-.718	.182	15.492	.488**

*p <.05
**p <.001

Table 10: Final Model Teen Reports of Monitoring Variable 2, "My [Father/Mother] Has Met Everyone I've Dated" and Ever Having Engaged in Oral Sex

Ever oral sex ***X^2= 228.744***	***B***	**SE**	**Wald**	**Exp(B)**
Monitoring Variable 2	-.128	.025	25.272	.880**
Teen age	.400	.037	116.261	1.492**
Teen gender	.051	.174	.086	1.052
Household Income	.088	.025	12.318	1.092**
White vs. Hispanic (reference)	.564	.207	7.423	1.757*
Black vs. Hispanic (reference)	.211	.260	.659	1.235
Hispanic vs. White (reference)	-.564	.207	7.423	.569*
Parental Education	-.111	.196	.318	.895
Parental Employment Status	-.096	.207	.214	.909
Parental Marital Status	-.800	.209	14.591	.449**

*p <.05
**p <.001

Table 11: Final Model Teen Reports of Monitoring Variable 2, "My [Father/Mother] Has Met Everyone I've Dated" and Ever Having Engaged in Vaginal Sex

Ever vaginal sex ***X^2= 263.055***	***B***	**SE**	**Wald**	**Exp(B)**
Monitoring Variable 2	-.094	.024	15.298	.910**
Teen age	.453	.036	154.870	1.574**
Teen gender	-.051	.164	.097	.950
Household Income	.021	.023	.864	1.021
White vs. Hispanic (reference)	.476	.195	5.998	1.610*
Black vs. Hispanic (reference)	.397	.241	2.716	1.488
Hispanic vs. White (reference)	-.476	.195	5.998	.621*
Parental Education	-.260	.184	2.002	.771
Parental Employment Status	.036	.192	.035	1.037
Parental Marital Status	-.518	.196	6.996	.596*

*p <.05
**p <.001

Table 12: Final Model Teen Reports of Monitoring Variable 2, "My [Father/Mother] Has Met Everyone I've Dated" and Consistency of Condom Use in the Past 3 Months

Condom consistency ***R^2=.122***	***B***	**SE**	**T**	**Sig**
Monitoring Variable 2	-.005	.032	-.155	.877
Teen age	.015	.057	.263	.793
Teen gender	.767	.223	3.441	.001*
Household Income	.003	.003	.080	.937
White vs. Hispanic (reference)	.639	.260	2.464	.015*
Black vs. Hispanic (reference)	.591	.341	1.736	.084
Hispanic vs. White (reference)	-.639	.260	-2.464	.015*
Parental Education	.269	.263	1.020	.309
Parental Employment Status	-.226	.268	-.842	.401
Parental Marital Status	.370	.259	1.429	.155

*p <.05
**p <.001

Table 13: Final Model Teen Reports of Monitoring Variable 2, "My [Father/Mother] Has Met Everyone I've Dated" and Consistency of Birth Control Use (other than condoms) in the Past 3 Months

Birth control consistency ***R^2=.108***	***B***	**SE**	**T**	**Sig**
Monitoring Variable 2	.108	.039	2.805	.006*
Teen age	.021	.069	.312	.756
Teen gender	-.178	.272	-.655	.513
Household Income	-.053	.041	-1.288	.199
White vs. Hispanic (reference)	.866	.318	2.726	.007*
Black vs. Hispanic (reference)	.533	.416	1.282	.202
Hispanic vs. White (reference)	-.866	.318	-2.726	.007*
Parental Education	.233	.321	.726	.469
Parental Employment Status	.064	.325	.196	.845
Parental Marital Status	-.185	.318	-.518	.562

*p <.05
**p <.001

Table 14: Final Model Teen Reports of Monitoring Variable 3, "My [Father/Mother] Knows Most of My Friends" and Ever Having Ever Engaged in Any Sexual Behavior

Any sexual touching ***X^2= 510.928***	***B***	**SE**	**Wald**	**Exp(B)**
Monitoring Variable 3	-.135	.027	24.460	.874**
Teen age	.462	.028	270.133	1.588**
Teen gender	.100	.143	.488	1.105
Household Income	.029	.020	2.199	1.029
White vs. Hispanic (reference)	.294	.168	3.089	1.342
Black vs. Hispanic (reference)	.204	.209	.959	1.227
Hispanic vs. White (reference)	-.294	.168	3.089	.745
Parental Education	-.132	.161	.667	.877
Parental Employment Status	.187	.165	1.282	1.205
Parental Marital Status	-.791	.171	21.425	.453**

*p <.05
**p <.001

Table 15: Final Model Teen Reports of Monitoring Variable 3, "My [Father/Mother] Knows Most of My Friends" and Ever Having Engaged in Oral Sex

Ever oral sex $X^2 = 342.366$	***B***	**SE**	**Wald**	**Exp(B)**
Monitoring Variable 3	-.129	.031	16.912	.879**
Teen age	.430	.033	173.345	1.537**
Teen gender	.132	.166	.636	1.141
Household Income	.090	.024	14.327	1.094**
White vs. Hispanic (reference)	.431	.195	4.886	1.539*
Black vs. Hispanic (reference)	.217	.248	.763	1.242
Hispanic vs. White (reference)	-.431	.195	4.886	.650*
Parental Education	-.111	.187	.351	.895
Parental Employment Status	.025	.195	.016	1.025
Parental Marital Status	-.889	.201	19.634	.411**

*p <.05
**p <.001

Table 16: Final Model Teen Reports of Monitoring Variable 3, "My [Father/Mother] Knows Most of My Friends" and Ever Having Engaged in Vaginal Sex

Ever vaginal sex $X^2 = 440.253$	***B***	**SE**	**Wald**	**Exp(B)**
Monitoring Variable 3	-.123	.030	16.782	.884**
Teen age	.501	.033	228.579	1.650**
Teen gender	.007	.157	.002	1.007
Household Income	.022	.022	1.032	1.022
White vs. Hispanic (reference)	.414	.186	4.965	1.513*
Black vs. Hispanic (reference)	.425	.231	3.373	1.529
Hispanic vs. White (reference)	-.414	.186	4.965	.661*
Parental Education	-.218	.176	1.531	.804
Parental Employment Status	.107	.183	.343	1.113
Parental Marital Status	-.635	.190	11.220	.530*

*p <.05
**p <.001

Table 17: Final Model Teen Reports of Monitoring Variable 3, "My [Father/Mother] Knows Most of My Friends" and Consistency of Condom Use in the Past 3 Months

Condom consistency ***R^2=.128***	***B***	**SE**	**t**	**Sig**
Tmon3	.059	.042	1.403	.162
Teen age	-.001	.055	-.010	.992
Teen gender	.779	.219	3.556	<.001**
Household Income	.001	.032	.016	.987
White vs. Hispanic (reference)	.613	.257	2.389	.018*
Black vs. Hispanic (reference)	.565	.329	1.717	.088
Hispanic vs. White (reference)	-.613	.257	-2.389	.018*
Parental Education	.288	.258	1.117	.266
Parental Employment Status	-.225	.262	-.858	.392
Parental Marital Status	.391	.253	1.547	.124

*p <.05
**p <.001

Table 18: Final Model Teen Reports of Monitoring Variable 3, "My [Father/Mother] Knows Most of My Friends" and Consistency of Birth Control Use (Other than Condoms) in the Past 3 Months

Birth control consistency ***R^2=.078***	***B***	**SE**	**T**	**Sig**
Tmon3	.092	.052	1.755	.081
Teen age	.043	.069	.625	.533
Teen gender	-.150	.274	-.547	.585
Household Income	-.065	.041	-1.602	.111
White vs. Hispanic (reference)	.893	.322	2.774	.006*
Black vs. Hispanic (reference)	.419	.411	1.019	.310
Hispanic vs. White (reference)	-.893	.322	-2.774	.006
Parental Education	.280	.322	.869	.386
Parental Employment Status	.089	.326	.272	.786
Parental Marital Status	-.021	.318	-.065	.949

*p <.05
**p <.001

Table 19: Final Model Teen Reports of Monitoring Variable 4, "My [Father/Mother] Knows Most of My Friends' Parents" and Ever Having Engaged in Any Sexual Behavior

Any sexual touching ***X^2=521.862***	***B***	**SE**	**Wald**	**Exp(B)**
Monitoring Variable 4	-.132	.024	29.948	.876**
Teen age	.456	.028	260.617	1.578**
Teen gender	.091	.143	.405	1.096
Household Income	.029	.020	2.241	1.030
White vs. Hispanic (reference)	.232	.168	1.907	1.262
Black vs. Hispanic (reference)	.222	.210	1.117	1.249
Hispanic vs. White (reference)	-.232	.168	1.907	.793
Parental Education	-.146	.162	.814	.864
Parental Employment Status	.254	.167	2.311	1.289
Parental Marital Status	-.722	.172	17.630	.486**

*p <.05
**p <.001

Table 20: Final Model Teen Reports of Monitoring Variable 4, "My [Father/Mother] Knows Most of My Friends' Parents" and Ever Having Engaged in Oral Sex

Ever oral sex X^2***=357.306***	***B***	**SE**	**Wald**	**Exp(B)**
Monitoring Variable 4	-.145	.029	25.184	.865**
Teen age	.424	.033	163.839	1.528**
Teen gender	.114	.167	.464	1.121
Household Income	.090	.024	14.220	1.095**
White vs. Hispanic (reference)	.360	.197	3.351	1.433
Black vs. Hispanic (reference)	.257	.250	1.056	1.293
Hispanic vs. White (reference)	-.360	.197	3.351	.698
Parental Education	-.104	.189	.302	.901
Parental Employment Status	.100	.198	.256	1.105
Parental Marital Status	-.823	.203	16.530	.439**

*p <.05
**p <.001

Table 21: Final Model Teen Reports of Monitoring Variable 4, "My [Father/Mother] Knows Most of My Friends' Parents" and Ever Having Engaged in Vaginal Sex

Ever vaginal sex ***X^2=441.478***	***B***	**SE**	**Wald**	**Exp(B)**
Monitoring Variable 4	-.114	.027	17.962	.892**
Teen age	.489	.033	220.063	1.630**
Teen gender	.005	.158	.001	1.005
Household Income	.021	.022	.911	1.021
White vs. Hispanic (reference)	.364	.186	3.830	1.439
Black vs. Hispanic (reference)	.424	.233	3.326	1.528
Hispanic vs. White (reference)	-.364	.186	3.830	.695
Parental Education	-.234	.177	1.746	.792
Parental Employment Status	.170	.184	.854	1.185
Parental Marital Status	-.570	.190	8.994	.566*

*p <.05
**p <.001

Table 22: Final Model Teen Reports of Monitoring Variable 4, "My [Father/Mother] Knows Most of My Friends' Parents" and Consistency of Condom Use in the Past 3 Months

Condom consistency ***R^2=.134***	***B***	**SE**	**T**	**Sig**
Monitoring Variable 4	.074	.040	1.854	.065
Teen age	.022	.055	.406	.685
Teen gender	.779	.219	3.555	<.001**
Household Income	.001	.032	.026	.979
White vs. Hispanic (reference)	.664	.257	2.582	.011*
Black vs. Hispanic (reference)	.502	.333	1.510	.133
Hispanic vs. White (reference)	-.664	.257	-2.582	.011*
Parental Education	.243	.259	.940	.348
Parental Employment Status	-.229	.263	-.869	.386
Parental Marital Status	.328	.253	1.299	.196

*p <.05
**p <.001

Table 23: Final Model Teen Reports of Monitoring Variable 4, "My [Father/Mother] Knows Most of My Friends' Parents" and Consistency of Birth Control Use (Other Than Condoms) in the Past 3 Months

Birth control consistency ***R^2=.062***	***B***	**SE**	**T**	**Sig**
Monitoring Variable 4	-.026	.051	-.513	.609
Teen age	.055	.069	.788	.432
Teen gender	-.193	.277	-.697	.487
Household Income	-.065	.041	-1.571	.118
White vs. Hispanic (reference)	.899	.326	2.758	.006*
Black vs. Hispanic (reference)	.485	.423	1.148	.253
Hispanic vs. White (reference)	-.899	.326	-2.758	.006*
Parental Education	.243	.327	.745	.457
Parental Employment Status	.111	.331	.336	.737
Parental Marital Status	-.050	.321	-.154	.878

*p <.05
**p <.001

Table 24: Final Model Teen Reports of Monitoring Variable 5, "There are House Rules About Who I Am Allowed to Be With in the House When My [Father/Mother] Isn't Home" and Ever Having Engaged in Any Sexual Behavior

Any sexual touching ***X^2=492.604***	***B***	**SE**	**Wald**	**Exp(B)**
Monitoring Variable 5	-.044	.024	3.244	.957
Teen age	.456	.028	270.999	1.578**
Teen gender	.125	.142	.782	1.133
Household Income	.026	.019	1.841	1.027
White vs. Hispanic (reference)	.282	.167	2.873	1.326
Black vs. Hispanic (reference)	.179	.209	.736	1.196
Hispanic vs. White (reference)	-.282	.167	2.873	.754
Parental Education	-.141	.160	.774	.869
Parental Employment Status	.192	.164	1.360	1.211
Parental Marital Status	-.753	.171	19.498	.471**

*p <.05
**p <.001

Table 25: Final Model Teen Reports of Monitoring Variable 5, "There are House Rules About Who I Am Allowed to Be With in the House When My [Father/Mother] Isn't Home" and Ever Having Engaged in Oral Sex

Ever oral sex ***X^2=338.626***	***B***	**SE**	**Wald**	**Exp(B)**
Monitoring Variable 5	-.110	.045	6.052	.896*
Teen age	.419	.032	168.443	1.521**
Teen gender	.147	.166	.782	1.158
Household Income	.085	.024	12.976	1.089**
White vs. Hispanic (reference)	.197	.457	.185	1.217
Black vs. Hispanic (reference)	-1.429	.875	2.668	.240
Hispanic vs. White (reference)	-.197	.457	.185	.821
Parental Education	-.124	.188	.436	.883
Parental Employment Status	.028	.195	.020	1.028
Parental Marital Status	-.844	.201	17.563	.430**

*p <.05
**p <.001

Table 26: Final Model Teen Reports of Monitoring Variable 5, "There are House Rules About Who I Am Allowed to Be With in the House When My [Father/Mother] Isn't Home" and Ever Having Engaged in Vaginal Sex

Ever vaginal sex ***X^2=433.831***	***B***	**SE**	**Wald**	**Exp(B)**
Monitoring Variable 5	-.059	.042	1.924	.926*
Teen age	.491	.033	225.365	1.635*
Teen gender	.028	.157	.031	1.028
Household Income	.020	.022	.806	1.020
White vs. Black (reference)	1.657	.816	4.123	5.242
Black vs. White (reference)	-1.657	.816	4.123	.191*
Hispanic vs. White (reference)	-.542	.454	1.423	.582
Parental Education	-.239	.177	1.835	.787
Parental Employment Status	.120	.183	.430	1.127
Parental Marital Status	-.605	.190	10.107	.546*

*p <.05
**p <.001

Table 27: Final Model Teen Reports of Monitoring Variable 5, "There are House Rules About Who I Am Allowed to Be With in the House When My [Father/Mother] Isn't Home" and Consistent Condom Use Over the Past 3 Months

Condom consistency ***R^2=.133***	***B***	**SE**	**T**	**Sig**
Tmon5	.066	.039	1.700	.091
Teen age	.022	.055	.403	.687
Teen gender	.854	.225	3.790	<.001**
Household Income	.002	.032	.065	.948
White vs. Hispanic (reference)	.650	.256	2.540	.012*
Black vs. Hispanic (reference)	.454	.339	1.341	.182
Hispanic vs. White (reference)	-.650	.256	-2.540	.012*
Parental Education	.262	.257	1.018	.310
Parental Employment Status	-.188	.263	-.717	.474
Parental Marital Status	.302	.254	1.188	.236

*p <.05
**p <.001

Table 28: Final Model Teen Reports of Monitoring Variable 5, "There are House Rules About Who I Am Allowed to Be With in the House When My [Father/Mother] Isn't Home" and Consistent Birth Control Use (other than condoms)Over the Past 3 Months

Birth control consistency ***R^2=.061***	***B***	**SE**	**T**	**Sig**
Monitoring Variable 5	.000	.048	.002	.998
Teen age	.057	.069	.823	.412
Teen gender	-.175	.284	-.617	.538
Household Income	-.066	.041	-1.607	.110
White vs. Hispanic (reference)	.921	.325	2.835	.005*
Black vs. Hispanic (reference)	.482	.428	1.124	.262
Hispanic vs. White (reference)	-.921	.325	-2.835	.005*
Parental Education	.255	.325	.784	.434
Parental Employment Status	.085	.330	.257	.797
Parental Marital Status	-.069	.323	-.214	.831

*p <.05
**p <.001

Table 29: Final Model Teen Reports of Monitoring Variable 6, "I tell my [father/mother] A Lot About What Is Going On In my Life" and Ever Having Engaged in Any Sexual Behavior

Any sexual touching ***X^2=524.060***	***B***	**SE**	**Wald**	**Exp(B)**
Monitoring Variable 6	-.151	.025	35.098	.860**
Teen age	.468	.028	270.516	1.597**
Teen gender	.086	.143	.363	1.090
Household Income	.025	.020	1.617	1.025
White vs. Hispanic (reference)	.323	.168	3.687	1.382
Black vs. Hispanic (reference)	.171	.210	.663	1.187
Hispanic vs. White (reference)	-.323	.168	3.687	.724
Parental Education	-.107	.162	.435	.899
Parental Employment Status	.163	.166	.961	1.177
Parental Marital Status	-.799	.172	21.657	.450**

*p <.05
**p <.001

Table 30: Final Model Teen Reports of Monitoring Variable 6, "I tell my [father/mother] A Lot About What Is Going On In my Life" and Ever Having Engaged in Oral Sex

Ever oral sex X^2***=355.427***	***B***	**SE**	**Wald**	**Exp(B)**
Monitoring Variable 6	-.157	.029	28.575	.855**
Teen age	.437	.033	174.075	1.549**
Teen gender	.106	.167	.401	1.111
Household Income	.088	.024	13.526	1.092**
White vs. Hispanic (reference)	.456	.197	5.390	1.578*
Black vs. Hispanic (reference)	.160	.251	.407	1.174
Hispanic vs. White (reference)	-.456	.197	5.390	.634*
Parental Education	-.067	.189	.127	.935
Parental Employment Status	.000	.196	.000	1.000
Parental Marital Status	-.899	.201	19.955	.407**

*p <.05
**p <.001

Table 31: Final Model Teen Reports of Monitoring Variable 6, "I tell my [father/mother] A Lot About What Is Going On In my Life" and Ever Having Engaged in Vaginal Sex

Ever vaginal sex ***X^2=444.405***	***B***	**SE**	**Wald**	**Exp(B)**
Monitoring Variable 6	-.123	.028	19.363	.884**
Teen age	.505	.033	229.451	1.657**
Teen gender	-.002	.158	.000	.998
Household Income	.019	.022	.768	1.019
White vs. Hispanic (reference)	.431	.186	5.351	1.538*
Black vs. Hispanic (reference)	.378	.232	2.654	1.459
Hispanic vs. White (reference)	-.431	.186	5.351	.650*
Parental Education	-.189	.177	1.138	.828
Parental Employment Status	.094	.183	.262	1.098
Parental Marital Status	-.634	.190	11.165	.531*

*p <.05
**p <.001

Table 32: Final Model Teen Reports of Monitoring Variable 6, "I tell my [father/mother] A Lot About What Is Going On In my Life" and Consistency of Condom Use in the Past 3 Months

Condom consistency ***R^2=.125***	***B***	**SE**	**t**	**Sig**
Monitoring Variable 6	.048	.040	1.186	.237
Teen age	.008	.055	.138	.890
Teen gender	.785	.220	3.567	<.001**
Household Income	.002	.032	.071	.944
White vs. Hispanic (reference)	.579	.260	2.226	.027*
Black vs. Hispanic (reference)	.593	.328	1.804	.073
Hispanic vs. White (reference)	-.579	.260	-2.226	.027*
Parental Education	.228	.262	.872	.385
Parental Employment Status	-.231	.263	-.879	.381
Parental Marital Status	.374	.253	1.482	.140

*p <.05
**p <.001

Table 33: Final Model Teen Reports of Monitoring Variable 6, "I tell my [father/mother] A Lot About What Is Going On In my Life" and Consistency of Birth Control Use (other than condoms) in the Past 3 Months

Birth control consistency ***R^2=.073***	***B***	**SE**	**t**	**Sig**
Monitoring Variable 6	.073	.050	1.456	.147
Teen age	.054	.068	.794	.428
Teen gender	-.142	.275	-.517	.606
Household Income	-.060	.041	-1.475	.142
White vs. Hispanic (reference)	.837	.327	2.558	.011*
Black vs. Hispanic (reference)	.455	.411	1.105	.271
Hispanic vs. White (reference)	-.837	.327	-2.558	.011*
Parental Education	.177	.327	.542	.589
Parental Employment Status	.085	.327	.260	.795
Parental Marital Status	-.060	.318	-.189	.851

*p <.05
**p <.001

Table 34: Final Model Teen Reports of Monitoring Variable 7, "I Hide A Lot of Information from My [Father/Mother]" and Ever Having Engaged in Any Sexual Behavior

Any sexual behavior ***X^2=524.060***	***B***	**SE**	**Wald**	**Exp(B)**
Monitoring Variable 7	-.151	.025	35.098	.860**
Teen age	.468	.028	.270.516	1.597**
Teen gender	.086	.143	.363	1.090
Household Income	.025	.020	1.617	1.025
White vs. Hispanic (reference)	.323	.168	3.687	1.382
Black vs. Hispanic (reference)	.171	.210	.663	1.187
Hispanic vs. White (reference)	-.323	.168	3.687	.724
Parental Education	-.107	.162	.435	.899
Parental Employment Status	.163	.166	.961	1.177
Parental Marital Status	-.799	.172	21.657	.450**

*p <.05
**p <.001

Table 35: Final Model Teen Reports of Monitoring Variable 7, "I Hide A Lot of Information from My [Father/Mother]" and Ever Having Engaged in Oral Sex

Ever oral sex X^2***=355.427***	***B***	**SE**	**Wald**	**Exp(B)**
Monitoring Variable 7	-.157	.029	28.575	.855**
Teen age	.437	.033	174.075	1.549**
Teen gender	.106	.167	.401	1.111
Household Income	.088	.024	13.526	1.092**
White vs. Hispanic (reference)	.456	.197	5.390	1.578*
Black vs. Hispanic (reference)	.160	.251	.407	1.174
Hispanic vs. White (reference)	-.456	.197	5.390	.634*
Parental Education	-.067	.189	.127	.935
Parental Employment Status	.000	.196	.000	1.000
Parental Marital Status	-.899	.201	19.955	.407**

*p <.05
**p <.001

Table 36: Final Model Teen Reports of Monitoring Variable 7, "I Hide A Lot of Information from My [Father/Mother]" and Ever Having Engaged in Vaginal Sex

Ever vaginal sex ***X^2=444.405***	***B***	**SE**	**Wald**	**Exp(B)**
Monitoring Variable 7	-.123	.028	19.363	.884**
Teen age	.505	.033	229.451	1.657**
Teen gender	-.002	.158	.000	.998
Household Income	.019	.022	.768	1.019
White vs. Hispanic (reference)	.431	.186	5.351	1.538*
Black vs. Hispanic (reference)	.378	.232	2.654	1.459
Hispanic vs. White (reference)	-.431	.186	5.351	.650*
Parental Education	-.189	.177	1.138	.828
Parental Employment Status	.094	.183	.262	1.098
Parental Marital Status	-.634	.190	11.165	.531*

*p <.05
**p <.001

Table 37: Final Model Teen Reports of Monitoring Variable 7, "I Hide A Lot of Information from My [Father/Mother]" and Consistent Condom Use in the Past 3 Months

Condom consistency ***R^2=.354***	***B***	**SE**	**t**	**Sig**
Monitoring Variable 7	.048	.040	1.186	.237
Teen age	.008	.055	.138	.890
Teen gender	.785	.220	3.567	.000*
Household Income	.002	.032	.071	.944
White vs. Hispanic (reference)	.579	.260	2.226	.027*
Black vs. Hispanic (reference)	.593	.328	1.804	.073
Hispanic vs. White (reference)	-.579	.260	-2.226	.027*
Parental Education	.228	.262	.872	.385
Parental Employment Status	-.231	.263	-.879	.381
Parental Marital Status	.374	.253	1.482	.140

*p <.05
**p <.001

Table 38: Final Model Teen Reports of Monitoring Variable 7, "I Hide A Lot of Information from My [Father/Mother]" and Consistent Birth Control Use other than condoms) in the Past 3 Months

Birth control consistency ***R^2=.293***	***B***	**SE**	**t**	**Sig**
Monitoring Variable 7	.082	.046	1.767	.079
Teen age	.080	.071	1.130	.260
Teen gender	-.188	.275	-.682	.496
Household Income	-.071	.041	-1.746	.083
White vs. Hispanic (reference)	.871	.325	2.677	.008*
Black vs. Hispanic (reference)	.459	.416	1.102	.272
Hispanic vs. White (reference)	-.871	.325	-2.677	.008*
Parental Education	.168	.323	.521	.603
Parental Employment Status	.130	.330	.394	.694
Parental Marital Status	.029	.319	.091	.928

*p <.05
**p <.001

Table 39: Percent of teens reporting "strongly agree" on each monitoring item, full sample, younger and older teens

Topic	Percent Strongly Agree (all ages)	Percent Strongly Agree (14 and younger)	Percent Strongly Agree (15 and older)
1: My [father/mother] knows a lot about how I'm doing in school.	61.7%	70.7%	53.9%
2: My [father/mother] has met everyone that I've dated.	37.8%	38.1%	37.7%
3: My [father/mother] knows most of my friends.	40.3%	50.2%	32.2%
4: My [father/mother] knows most of my friends' parents.	24.0%	34.4%	15.5%
5: There are house rules about who I am allowed to be with in the house when my [father/mother] isn't home.	57.1%	68.8%	47.4%
6: I tell my [father/mother] a lot about what is going on with my life.	34.0%	43.1%	26.5%
7: I hide a lot of information from my [father/mother].	34.9%	41.9%	28.6%

Conclusions and Implications

The research I completed for this dissertation has both applied and theoretical implications for research, programs, and policy. First, the communication scales developed for teens and parents provide new tools for measuring parent-teen communication about sexuality. As discussed in Paper 1, there have been a wide variety of measures used to measure parent-child communication about sexuality in the literature but few have been reported with the rigorous psychometric properties that these scales demonstrate. Further, there are few scales measuring theory-based communication about sexuality, and those that exist generally have many more items than the theory-based scale developed for this study, which makes this scale desirable and practical for use by researchers and practitioners. The strong psychometric properties of the theory-based scale add strength to the already significant body of literature validating the Unified Theory of Behavior as a conceptual framework for measuring parent-child communication about sexuality.

This study also provides important insight about communication related to sexuality within diverse families. Few samples of this size have examined the topic of parent-teen communication and monitoring related to sexual behavior with sufficient numbers of African American, Latino and White families to allow for direct group comparisons. More frequent communication among African American and Hispanic families and the reports of fewer barriers to communication among African Americans suggests that additional work is warranted to learn more about the underlying reasons for these differences. Better understanding of more positive dynamics in diverse families may lead to insights that can be used to better tailor programs and messages for parents and to inform practitioners.

This study shows that there are gender differences in how much mothers and fathers report talking to their children about topics related to sexuality and that teen males and females report varying levels of conversation and monitoring on the part of parents. Programs and outreach strategies for parents must continue to promote conversations and monitoring of sons as well as daughters and help parents to understand that fathers have a unique and important role to play in positively influencing their adolescents' sexual health (Guilamo-Ramos, Bouris, Lee, McCarthy, Michael, Pitt-Barnes & Dittus, 2012.)

The lack of associations between communication and sexual behavior outcomes in this study could be a function of the overall insufficient frequency of discussions about key topics related to sexuality by parents and teens or it could be a reflection of the lack of ability for parent-teen communication to influence adolescent sexual behavior. However, it is critical to keep in mind that the purpose of parental communication about sexuality topics goes beyond influencing young people's initiation of sexual behavior or frequency of condom and birth control use. Parents have a critical role to play in helping their adolescents to learn to navigate relationships and to learn values that are needed throughout the life course. The limited outcome measures that are currently available for research related to sexuality is likely a reason that other positive influences parents may have on adolescent sexuality are not well measured or understood and represents another area into which more research is warranted.

There is particular salience to the finding that neither parents nor teens believe that parents not having enough information about sexuality is one of the main barriers to communication about sexuality. Existing programs for parents related to sexuality tend to emphasize factual information about sexual and reproductive health (Sutton, Lasswell, Lanier, Willis & Miller, 2014). This study suggests that programs need to attend to other barriers to

communication, particularly helping parents understand that talking about sexuality topics needs to be lifelong (to combat the belief that parents have "talked enough" about these topics) and that even if they or their teens are embarrassed, the conversations are well worth having.

Programs that seek to help parents to encourage their teens to delay the onset of sexual activity would also be strengthened by a greater focus on helping parents develop and implement monitoring strategies. There is a strong association between higher levels of monitoring and lower levels of sexual activity in this study. Many of the behaviors are more general parenting behaviors that are not necessarily thought of by parents as ways to positively influence teens' sexual decision-making. Helping parents to understand the importance of and strategies for monitoring their teens may help to make these practices more widespread and thus serve to help young people to delay sex until they are ready. The fact that even modest increases in monitoring has significant associations with sexual behavior outcomes suggests that this is an important lever to be strengthened and should have a greater focus in interventions for parents.

Finally, more work needs to be done to understand how parents may be able to positively influence their sexually active teens. There were not a sufficient number of sexually active teens in this sample to fully explore whether there were associations between parent-teen communication or parental monitoring and consistent use of birth control and condoms. Additional work is merited to explore how parents might be able to better influence protective behaviors among sexually active teens.

References

Guilamo-Ramos, V., Bouris, A., Lee, J., McCarthy, K., Michael, S., & Pitt-Barnes, S., Dittus, P. (2012). *Paternal influences on adolescent sexual risk behaviors*: A structured review. *Pediatrics*, 130 (5), 1313-1325.

Sutton, M., Lasswell, S., Lanier, Y., Willis, L., & Miller, K. (2013). Impact of parent-child communication interventions on sexual behaviors and sex-related cognitive outcomes of Black/African American and Hispanic/Latino Youth: implications for HIV/STI disparities and prevention efforts. *Journal of Adolescent Health, 52*(2), S56-S57.